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I

THE ORGANIZATION OF AMERICAN EDUCATION

The historian of one of our Maine towns, naturally desirous of including as many great names as possible in the number of its sons, discovered to his great disappointment that one who had always been regarded as the most distinguished son of the town had the misfortune to be born in a neighboring town to which his parents were making a visit. Wishing to give all possible glory to his town, and at the same time to be strictly faithful to historic fact, the judicious historian stated the case as follows: "Dr. A. was born in this town, though his parents were absent at the time." American education was born in similar circumstances. The professors of pedagogy were absent at the time. American education, like Topsy, "just growed." It has already outgrown the ideals which gave it birth.

Let us recall briefly what these ideals were. First came the ecclesiastical ideal, the parent of the New England school, academy, and college, having the training of a learned clergy as its foremost purpose. Next came the political ideal, the parent of the free public school, claiming public support on the ground of the necessity of education as a basis for an intelligent suffrage. Then came the industrial ideal, which has justified what otherwise would have seemed to penurious parents an inordinate amount of "schooling," on the ground of its commercial value.

While these partial and relative ideals have been doing their

work, there has been springing up within the minds of the American people an ideal of education, deeper, richer, truer than any of these, and broad enough to include them all. It is the social ideal of complete and rounded manhood and womanhood; the ideal of a life so full of interest and enthusiasm and intelligent delight that it shall be worth living in and for itself; the ideal of humanity as an end in itself, and of education as an indispensable means to its realization. Our fathers builded better than they knew. This social ideal is the child of the union of the two ideals which were most prominent in their minds: the ecclesiastical and the political.

This social ideal of an intelligent, and noble and happy human life, whether we like it or not, whether we believe in it or not, whether we vote for it or not, actually has come to be the guiding principle in American education. On no narrower grounds can we justify what we have done, and are about to do. Since this ideal is destined to rule, it is well for us to reckon with it, and see precisely what it means, and what changes it calls for. For whatever this ideal demands, we shall be compelled to grant. Here in America we tolerate no outside interference in educational affairs. Before one authority, and one only, we bow in absolute submission: the authority of clear ideas, cherished in the hearts of the people.

It is my purpose in this article to point out the forms in which this social ideal of education is embodied and expressed in our educational system, and to indicate the changes it will welcome, and the attempted changes it will resist. I promise no new and shorter route to the riches of some intellectual Indies. I shall try to make it clear that the educational world in which we have been living all the time, is not a flat surface, on which subjects for study have arranged themselves by accident; but that it is a sphere, the parts of which are related to each other by necessary laws, and the functions of which are to be determined by reference to this social ideal which is their common center.

The particular scheme which I present will doubtless fail to win the approval of a single person. I expect it to be criti-

cised, rejected, and condemned. That is what it is here for. My consolation lies in the assurance that "victi victoribus leges dederunt," and that in this case, in rejecting my conclusions, the reader may be led to take my point of view, and think out the problem of the organization of American educa-

tion on these lines to more successful issues. It is presented for the sake of its form rather than its contents.

The diagram consists of seven concentric circles, representing the seven stages of education; the nursery, the kindergarten, the primary, grammar, and high schools, the college, and the university. The circles are divided by eight radii into eight arcs, representing as many departments of knowledge and training. The ever widening scope of education is represented by placing the nursery at the center, and advancing by constantly enlarging circles to the university on the outside, which is bounded only by the infinite. The university circle is

subdivided in each department, presenting the practical profession on the left, and the theoretical pursuit on the right. The age of pupils in each grade, represented in the diagram, is the actual, not the ideal age. The shortening of the period devoted to the primary and grammar work, especially for those fitting for college, is manifestly an imperative necessity.

The department of language is represented by writing in the primary school, grammar or language study in the grammar school, composition and the study of foreign languages in the secondary school; rhetoric and more languages in the college, while in the university it becomes in its practical aspect journalism, using that word in the broadest sense as covering the communication of ideas by writing, and in its theoretical aspect, the study of philology.

The department of literature, which is so closely allied to language that it is impossible to draw a hard and fast distinction between the two, begins with reading in the primary school, and take up selections from the best authors in the grammar school; studies authors directly, and their works as wholes, in the high school; includes the literatures of the chief nations, ancient and modern, in the college; and at the university looks to authorship as its practical, and to literary criticism as its theoretical consummation.

Mathematics begins with number in the primary, passes to arithmetic in the grammar; to algebra and geometry in the high school; to trigonometry and calculus in college; and in the university becomes practical in engineering, and theoretical in the higher mathematics.

Physical science begins with the study of natural objects in the primary school; studies the more obvious and impressive aspects of nature in the grammar school; presents the outlines of the more general and comprehensive sciences in the high school; enters upon the more detailed study of special sciences in the college; and in the university finds practical application in technology and medicine, and its theoretical continuation in special scientific investigation.

Physical culture is provided for in the primary school by

play, and rhythmic movements in unison; in the grammar school by Swedish or other convenient system of gymnastics; in the high school by the more difficult and interesting gymnastic feats; in college by manly sports and athletics; and has its special practical application in military life, and is continued by life in the open air.

Art should begin with studies of form and color in the primary school; deal with drawing and construction in the grammar school; become manual training in wood and metal in the high school; keep its hand in by laboratory methods, and by special study of art in the college; and lead in the university either to the mechanic arts or the fine arts.

History should begin in the primary school with stories; lead to connected narratives in the grammar school; take up the history of nations and institutions, and the forms of government in the high school; deal with constitutional history and sociology in the college; and open out into law and politics as the practical, and historical research as the theoretical conclusion in the university.

Philosophy in the primary school consists in training the children in right habits; in the grammar school it is instruction in the principles of right conduct; in the high school it is a presentation of practical ethics in its reasonable and necessary laws; in college it is psychology and moral philosophy; in the university it is theology and pedagogy if practical, metaphysics if theoretical.

The first and most obvious corollary to be drawn from this diagram is the principle that knowledge advances from the general to the particular; not, as has often been supposed, from the particular to the general. The nursery is the place where study is most general and universal. As Professor James says, "The baby, assailed by eyes, ears, nose, skin, and entrails all at once, feels it all as one great, blooming, buzzing confusion. The first sensation an infant gets is for him the universe. And the universe which he later comes to know, is nothing but an amplification and implication of that first simple germ which, by accretion on the one hand and intussusception on

the other, has grown so big and complex and articulate that its first state is unrememberable."

Knowledge is from within outward, and proceeds from the universal to the particular. As Browning has said,

> "To know,
> Rather consists in opening out a way
> Whence the imprisoned splendor may escape,
> Than in effecting entry for a light
> Supposed to be without."

The kindergarten is a continuation of the processes of the nursery; and retains the same universality of subject matter. The separate departments are not here marked off and named. The child is still getting acquainted with self and the world. The glory of the kindergarten is its emphasis on education as a letting-out of power, instead of a cramming-in of information.

The well conducted primary school retains many of the methods of the kindergarten. The long names of the several departments of study remain unknown. I was looking over some papers in a Boston primary school not long ago, and I noticed that while their work with numbers was excellent, their spelling of the word arithmetic had but one characteristic in common—that of being wrong. I asked the teacher how that happened. "Why," she said, "they never saw or heard the word until it came to them on the examination paper." The grammar school presents the departments for the first time as distinct and separate subjects. And yet good teaching makes one department help all the others at this stage. Drawing, for instance, enters into everything. In the examination books of the grammar grade of the same school, whether it was the articles mentioned in a problem in arithmetic, or a product of the country studied in geography, or a scene described in English literature, or an experiment performed in physics, or bones and muscles described in physiology, or an event related in history, everything was accompanied by a sketch to give it reality and life.

In the high school, the eight departments become distinct,

and are pursued in different ways, and often in different courses.

In the college, differentiation between different branches of the same department comes in. There is a professor, a room, and a library or laboratory for each of several sciences and languages. Ground which the high school would go over in a term in its general way is subdivided in the college so as to occupy several courses each a year or more in length.

Finally, in the university, fields which occupy a year of study in the college, widen out so as to give opportunity for a three years' course in several of their subdivisions.

This progress from the universal to the particular is the secret of that increasing modesty which comes with advancing knowledge. The graduate of the lower schools thinks he knows everything. In a sense he does; only he does not know much of anything about it. The graduate of college or university begins to realize the tremendous sweep of the vast circle of special knowledge, and hence he sees how small a fraction of it he has compassed. This is why knowledge and the conceit of knowledge are always in inverse ratio. It shows, too, very clearly why there is no such thing as an end to the process, or a finished education.

I propose to consider in order the five great institutions in our educational system, the primary, grammar, and high school, the college and the university, with a view to the part each must perform, and the contribution each must make, in order to fulfill its function in a system the end and aim of which is the richest life, the completest manhood, the highest social well-being of the citizens of a republic.

The primary school can no longer confine itself to "the three R's." A primary school thus restricted covers only three out of the eight departments which must lie at the base of a symmetrical education. The accurate observation of natural objects must lay the foundation for future scientific interest. Inasmuch as it is impossible for children at this stage to confine their attention for over twenty minutes or half an hour at a time to self-directed study, there must be frequent

intervals of exercise and recreation. The five or six hours of close confinement in artificial positions which has done so much to injure the health of growing children, must give way to shorter hours, broken by exercises and diversions which will tend to strengthen the body and improve the health.

The bodily exercise may be combined with exercise of mind. Modeling in clay, paper-folding, drawing, not only develop the powers of eye and hand, but bring them under the control of mind and will, and have intellectual and moral results in accuracy, patience, perseverance, and self-control, as well as æsthetic results in improved taste and appreciation of symmetry of form and beauty of proportion.

Stories of heroes, explorers, stirring adventure, and brilliant exploits will awaken the interest in human deeds, which later will find its proper food in history and biography.

Discipline in punctuality, prompt obedience, neatness, orderliness, thoroughness, and politeness, will lay the foundation for that conscious direction of life in wisdom's ways which is philosophy.

With good teaching it is perfectly possible to do all these things and make just as much progress in reading, writing, and arithmetic as is ordinarily made in the primary school in which these are the only subjects taught. The expansion of the curriculum in these directions simply takes advantage of the child's natural curiosity and interest, and turns into pleasant and profitable channels energies which hitherto have been either wasted in dawdling or repressed by the rod.

The bane of the grammar school has been the narrow industrial ideal that has been forced upon it by narrow-minded parents. In order to keep children in the grammar school it has been thought necessary to offer a course which the most stupid and hard-headed parent would regard as practical. The tendency of this subserviency to the narrowest sense of the word practical has been to keep the grammar school down pretty closely to a continuation of "the three R's." The acceptance of the social idea will work reforms here in nearly every department. Reading will be no longer confined to "pieces" from a reading

book; but will deal with continuous selections from the best authors. Literature will be dissected less, and enjoyed more. Arithmetic will not be carried to its remotest commercial applications; and instead algebraic methods will be introduced for the solution of the more difficult problems; and children at this stage will learn to know what a geometrical demonstration is.

Without attempting to treat any particular science exhaustively, the more obvious phenomena of physiology, hygiene, astronomy, botany, political and physical geography, and physics, will be made intelligible to the children at this stage.

The Swedish, or some equally simple and convenient system of gymnastics will be a regular exercise.

The beginning made in the study of form and color in the primary school will be continued by drawing and construction of forms and objects in the grammar school. They will know how to express their thoughts through hand and eye as well as by tongue and lips.

The consecutive narrative of English and American history, with enough of general history to give their rightful setting to the history of these nations, will be so taught as to convey the sense of the continuity and causation of events, rather than the mere chronicle of names and dates.

Without attempting to construct a system of morality, the teacher will encourage pupils to inquire into the reasonableness of moral rules and customs, and to see their necessity as well as to respect their authority.

The narrow ideal of industrial utility does not press so hard upon the high school and academy as upon the grammar school. Parents who send their children to the high school and academy thereby manifest a sympathy with the liberal, or as I have called it, the social ideal of education. Or if there is the lack of this liberality on the part of a portion of the scholars, the high school turns them over to an English, or business course, and leaves its classical and scientific courses free for the purposes of a liberal education.

The requirement of some language other than English of as

many as can be made to bear it should be made on the ground that he who knows but one language knows none in a thorough and rational manner. The substitution of the direct study of authors in literature for the cramming of dry and dreary text-books about them; and the study of classical literature in translations for those who do not intend to study it in the original, are the next steps forward in the department of literature in high schools. The application of mathematics to surveying gives a reality and interest to this most abstract of studies.

The high school can make a good beginning in the outlines of zoölogy, botany, chemistry, physics, and astronomy. One or more of these sciences, taught by actual work in the laboratory, should be required of every student, whether he be fitting for college or not.

Gymnastic feats, games, and sports, will best continue the gymnastics of the lower schools. Severe training for athletic contests should be discouraged at this period, as likely to injure growing youth.

Students who have had manual training in the earlier stages will now be ready to undertake work in wood and metal.

History may now penetrate beneath the surface and study the growth of nations instead of the narrative of events. The forms of civil government may be taken up in connection with the study of history.

Students are by this time sufficiently mature to study the relations of duties to each other, and to see duty and virtue, not as a sum of separate and arbitrary rules and regulations, but as the indispensable and inter-related conditions of individual and social well-being. Without attacking the subtleties of moral philosophy, they can master the essential principles of practical ethics.

A high school or academy in which these subjects are taught will at the same time be an adequate preparation for college, and a valuable preparation for practical life.

In the college the question of required and elective studies becomes most important and most difficult. In the primary

school the subjects are so general and fundamental that all must be required. In the university, on the other hand, the circle is so vast and the subjects so highly specialized that everything must be elective.

The departmental method of instruction gives promise of the possibility of a slight degree of election, as that of a foreign or ancient language, in place of the refinements of English grammar and arithmetic, even in the grammar school.

In the high school the demands of the widening circle of knowledge, and the limitations of the pupils in maturity and judgment, have resulted in giving a pretty wide range of choice. It is, however, choice between courses rather than between particular studies.

The circle of studies represented in a college is too vast to be required of everyone. The attempt to scatter energy equally over so broad a field inevitably results in vagueness, generality, and superficiality. It is merely a continuation of a high school course under a false name. A course entirely elective, on the other hand, is liable to be so specialized as to stunt and dwarf powers that must be developed at this period or remain forever undeveloped. This is giving a university course to students who are not ripe for it.

The college should require from every student some thorough work in each of the great departments of human knowledge; and at the same time give each student opportunity to pursue two or three of these lines far enough to come in contact with their problems at first hand, and feel the thrill of intellectual ardor that comes from bivouacking on the outposts of scholarship.

A course about half required and half elective is that which best fulfills the function of the college in the educational system. The college which does not aim at some such adjustment of its courses is unworthy of the name. High school it may be. University it may want to be. College it is not.

The college stands pre-eminently for the social ideal of a liberal education. It is free from interference from town or city. If it is not true to the ideal of a liberal education, it has

no one but itself to blame. The ideal college course is not so easy to mark out as is that for the lower grades. The college must require of its graduates familiarity with the important languages, Greek, Latin, French, and German, and give opportunity for Anglo-Saxon, Spanish, and Italian in addition. It should require intimate and accurate knowledge of some of the masterpieces of both ancient and modern literature, and give opportunity for the thorough study of all the greatest writers of Europe and America. It must enforce the drill of algebra, geometry, and trigonometry on all its students, and give ample opportunity for study of the higher mathematics. The separate sciences must each have their professors, their laboratories, and their facilities for individual work. The college should require of every student familiarity with the scientific method of study in at least one important branch of science, and give opportunity for the study of at least five or six of the leading sciences.

The college may well require regular exercise, and reasonable proficiency in such manly sports as sparring, fencing, and wrestling of all its students, leaving athletics to the free choice of the students under competent medical supervision.

The laboratory methods of scientific study will keep up the dexterity acquired in previous manual training, and electives in the fine arts will continue the artistic development.

Some knowledge of constitutional history and political economy should be required of all college graduates, and there should be numerous electives in history and sociology. All should be required to study psychology and moral philosophy, and there should be electives in these subjects, and in metaphysics.

The distinguishing feature of American education is the college. There is nothing exactly like it in any country in the world. In European countries the first half of the work done by an American college is done in institutions corresponding to our high schools and academies; the last half is done in the university.

There is a great deal of talk at the present day about the

excellent features of these foreign systems. Various schemes have been suggested for abolishing the college in whole or in part. More serious than all this discussion, however, is the attitude actually taken by universities which admit to university courses, university methods, and university freedom, students directly from the high schools and academies. Boys and girls who have had no training beyond the drill of the preparatory school; who have never assumed the direction of their own minds in any intellectual pursuit; who have never tasted literature, except in the dried extracts of the text-book or the set passages of a requirement; who have never carried science beyond the witnessing of a few spectacular performances by the instructor; who have never been trained to bring their nerves and muscles, their appetites and passions under either physical or moral control; who have never been trained to do a piece of neat and thorough work with hand and eye; who have never carried history and political science beyond the narrative of exploits, and the description of established institutions; who are utterly ignorant of the laws which govern the workings of the mind, and ought to govern the exercise of their wills;—these boys and girls are to be thrown into the distractions of city life; into the maze of university specialization; into the vastness of our outer circle. What will be the result? For persons resident in the vicinity and who can live at home these institutions offer exceptional advantages, though at the sacrifice of that undefinable but priceless experience which we call college life. For persons of exceptional maturity of mind and character these institutions afford opportunities for self-development, in many respects superior to those of smaller institutions. For the great majority of boys and girls who desire to continue their education beyond the high school, the immediate entrance upon the full freedom of university life is a misfortune.

The breaking down of health, of character, of serious intellectual purpose cannot fail to be vastly greater in the free life of a great university city than in the quiet seclusion of a coun-

try college town, where each professor knows his students, not by name only, but by their habits, their associates, their whereabouts. I know it is easy to sneer at virtue that needs to be secluded, and the character which is formed at a distance from temptation. It is true that strength is formed by conflict with the evil of the world. There may be something in the claim that it is worth while to sacrifice many weaklings to make one man of power. If these arguments were applied to mature men there would be much force in them. Applied, as in this case they are applied, to immature persons, they are absolutely fallacious. If mature men fall into temptation they have themselves to blame. If immature persons fall before temptations which, if they had met them in maturer years they would easily have overcome, then the blame rests with those who allowed them to be exposed to temptation prematurely. The colleges connected with universities receive a much larger proportion of the sons of idle, luxurious, and falsely ambitious parents whom it is impossible for any institution to save. But a large proportion of the men who come to nothing in these larger institutions, would be saved to respectability and usefulness, if not to honor and distinction, in the smaller colleges. The country college holds its students to an all-round development intellectually, and to individual responsibility morally, during the critical years from seventeen or eighteen, to twenty-one or twenty-two. As a result it turns out not specialists, but men. And you can always make a specialist out of a man afterward if you please. You cannot always make a man out of a person who has been made a specialist first. As long as character is of more consequence than manners; as long as symmetry is more to be desired than particular accomplishments in early training; as long as the achievements of mature life rather than the performances of youthful precocity are the test of the worth of education, so long the small college will continue to be the best place to send a boy or girl for the years succeeding the high school.

The American college is the peculiar product of American

democracy. Democracy requires for its successful working that each individual who aspires to leadership shall be a tolerably complete and rounded being. Premature specialization will do well enough for a nation in which each man's place and function is fixed for him by caste or custom or imperial mandate. Democracy requires in addition to his special profession or craft, that each man shall be, as Simonides says, "built four-square in hands and feet and mind, a work without a flaw." The institution which continues the symmetry of elementary education until the elements of the languages, sciences, and social institutions are mastered, and prepares the way for intelligent specialization on this broad basis; the institution which has approved itself by sending forth the great majority of the men who have made the experiment of democracy a success; this institution will never be superseded by institutions whose proper sphere lies in another circle, nor discontinued to give room for an educational *régime* patterned after that of monarchical countries.

I will not attempt to discuss in detail the great variety of subjects with which the university must deal. I will confine myself to certain obligations which these institutions owe to our educational system, and to the community which it serves.

First, a university which is a university in fact as well as in name, will insist upon the equivalent of a college course as a condition of admission to that specialized study and that absolute academic freedom which are the prerogative of students seeking the higher degees. Not only candidates for the degree of doctor of philosophy, but also candidates for such professions as law, medicine, and the ministry, need all the breadth of culture, the openness of mind, the range of intellectual sympathy that a college course can give, before they narrow themselves down to the details of their special studies. If a sufficient number of powerful universities will take the lead, as some are already doing, and refuse to allow men to become candidates for these higher degrees without at least some elements of collegiate training, they will do

much to raise the standard of the intellectual and professional life of the country.

There will soon come to be clearly recognized two kinds of men in these professions: those who have passed from a broad culture through the best institutions, and those who, with little previous training, have graduated at inferior institutions. I am well aware that in time past some of the most noble and useful members of these professions have entered them with little preparatory training. Such men are to be found in the front rank of all the professions to-day. The requirements of all these professions, however, are rising rapidly. What was possible twenty years ago is undesirable to-day, and should be impossible twenty years hence. If the universities will only insist on it, we can just as well have college-trained men in these leading professions as not. It is of immense importance to the welfare of the country that these professions shall be in the hands of men of the broadest and most thorough training. What the country needs is not more doctors, but more men in the medical profession who are able to form clear conceptions by scientific methods of the cause and cure of disease. We do not need more men in law and politics. We do need men who can see clearly and proclaim effectively the principles which underlie our legal and political relations. We do not need more clergymen; or if we do the need is an artificial one begotten of excessive sectarianism. We are terribly in need of men to whom the laws that govern spiritual life are clear and transparent, and who can make those laws forceful for the uplifting of mankind. We are not in serious need of numerical re-enforcements in the profession of teaching. We are sadly in need of scholars who have carried their studies far on into the outer circles of human knowledge, and are willing to come back into the smaller circles and make the abstract and general terms which education deals with in these lower stages luminous with the light which comes from accurate special knowledge. As Emerson says, "He that will do anything well must come to it from a higher ground." Unless one has gone in his own study far beyond the point at which

he undertakes to teach, no elaborateness of method, or outfit of pedagogical theories and devices will save his teaching from being dull and heavy and dry and dead.

It is the duty of the universities, and of the managers of professional schools, to make every effort to secure that broad basis of training and interest without which the professions degenerate into trades, and their practice becomes subject to rule of thumb.

The universities and the colleges need to respect each other's rights and to promote each other's interests. The college, or university of collegiate grade, which keeps half a dozen graduate students hanging about its grounds with inadequate facilities, irregular instruction, and uninspiring companions is doing a wrong both to the individuals it thus keeps away from the universities and to the universities from which they are kept. The college should do its proper work with all its might, using the whole time and strength of its force upon its undergraduate work; and then it should speed its departing graduates to the real universities. The universities in turn owe it to the colleges to make admission to the best opportunities for graduate and professional training conditional upon at least some elements of collegiate training.

Such are the institutions which the American people have developed for the expression of their social ideal of education. These are the means they have established for the distribution, to all who will receive it, of the intellectual riches of the world. Other systems may make better soldiers, better specialists, better functionaries in shorter time. There is no system in existence so perfectly adapted to the highest work of education—the development of symmetrical manhood and womanhood. Let us appreciate this system of education at its true worth. Let us not be blind to its faults and shortcomings. Let us be ever ready to welcome all improvements which will make it more efficient in its great and noble work. Let us, however, jealously guard it against all innovation that would destroy its symmetry, or maim any of its essential members, or divert it from its high spiritual calling to lower and

more mercenary aims. It stands to-day at once the firm foundation and the crowning ornament of this great republic. No vocation can be more patriotic than that of serving in its ranks. No calling can be more holy than that of ministering in its name.

In all its several grades and departments this work is one. Whether it be the mother in the nursery who represents to her trusting child all wisdom and all goodness, or the university specialist who meets a few chosen students on a single narrow line once or twice a week; whether it be the primary teacher instilling knowledge through every opening pore of the child's intelligence, or the college professor kindling enthusiasm in his favorite department; whether it be the grammar school teacher giving to the great mass of working men and women the impression they will carry into the heat and turmoil of their laborious lives, or the academy principal molding the thought and purpose of those who are to be leaders of their fellows, all are colaborers in one great and glorious work, one of the greatest in which man or woman can engage: that of interpreting the infinite riches of the laws of nature and the boundless treasures of the thoughts of God to minds naturally formed and divinely fitted for their apprehension and enjoyment.

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II

ELEMENTARY GREEK AS A COLLEGE STUDY

The attempts at readjustment of the traditional liberal curriculum in the past decade have directed their main force against the position of Greek in that curriculum. The discussions, conducted largely on *a priori* grounds, while they have notably enlarged the prevailing view of the meaning, aim, and content of a liberal education, have not reached any practical solution. They have neither defined nor simplified the task of the schools; they have rather brought them confusion and helped increase their burden. The great stumbling-block in the way of our secondary education is not poor teachers nor bad methods, nor inadequate equipment, nor even school-committees, but it is the plethora of subjects. The secondary schools, as preparatory schools, teach too many things. Confusion of purpose and the lack of common understanding between school and college are largely responsible for this.

The discussions referred to, if they have as yet effected nothing else, have convinced us that a liberal education can no longer be absolutely characterized by the presence of particular studies, though they have not by any means convinced us that for educative purposes one study is as valuable as another. It can be no longer maintained, and is, in fact, I believe, no longer maintained by the mass of educational authorities, that the study of Greek is an essential element of a liberal education. That it affords, however, the means of the finest literary training, and holds and will continue to hold a positively unique and unrivaled position among those studies whose purpose it is to re-think and re-live the nobler products of the liberated human soul, is more assuredly guaranteed to-day than ever before.

The enlarged idea of a liberal education affects not only the

subjects involved in it, but makes it applicable to a vastly wider circle of men. Men of more diverse conditions and purposes are now seeking it. There is an increasingly large number of cases in which Greek is unsuited to the need. To put it frankly, Greek is too good for some men, for some men even who deserve a liberal education. It is too good for the need. It is too fine a tool for the work in hand.

In response, now, to a general demand for a broadening of the liberal curriculum, alternatives for Greek have in different forms been admitted into the requirements of many colleges, as at Harvard since 1886, or—what would amount essentially to the same thing, if anything like equivalence were effected—courses have been established for admission to college in which Greek is replaced by a modern language. The general effect of these alternatives has been, and, so far as I know, with perhaps the exception of Harvard, still is, the lowering of the grade of requirement. The opportunity of avoiding Greek has unquestionably served, thus far, rather as a boon to scant scholarship than an emancipation to fettered aspirations. The taint which in consequence undeniably rests upon these substitute courses can be removed only when their standards are made equal to or even higher than those of the classical course. They can never compete fairly and frankly with the classical course until then, and what is more, not until then, can their real value be fairly tested. They are now a debased coinage. The old classical course still sets the recognized standard, and the new courses must be adjusted to it, and not it to the new courses.

The Greek question is therefore unavoidably associated with the general question of the standard of admission to college. Shall the pressure upon the school curriculum be relieved by continuing to push up this standard, and lengthening the preparatory course?

During that period of unalloyed admiration of the German system, from which, if I am not mistaken, we are now emerging, and as I believe, fortunately, this elevation of standard was the treatment almost universally recommended for im-

proving our educational system and healing all our academic ills. According to the pedagogical dream of that period, our preparatory schools were to be made into German gymnasia by advancing the college requirements, and the veritable American university was to be created out of the college by treating the same with jack-screws from beneath, and with the elective system from above. In the application of this recipe Harvard led the way. It is now becoming apparent that Harvard has gone farther than she is likely to be followed. A large part of our present difficulties in co-ordination is due in fact to a dislodgement of functions which this elevation has caused. The recent appearance of a demand for a three years' baccalaureate course is indeed a confession, either that the advance of standard has gone too far, or that the dream of creating the university out of the undergraduate college is abandoned. The American equivalent for the German university courses is not to be created out of the American college; a certain part of that equivalent must be created above the college.

In spite of all that we may learn from the educational experience of other nations, we have now reached a point where we should make it clear to ourselves that we shall be obliged to find for our American educational problem a distinctively American solution. Among the terms of the problem must figure prominently the facts of existing institutions. The "small colleges" constitute a very stubborn fact. Most of them will resist rechristening either into academies or into universities. It must now be regarded as a settled fact that the German dualism of gymnasium and university is to be represented in America by the triad of academy, college, and graduate school.

There is a vast fund of loyalty and of goodly traditions—if not always of money—vested in the small colleges that insures their persistence, and with them, of the old A. B. course as intermediate between the school education and the special or technical education. These colleges are better equipped for supervising the education of boys between the ages of sixteen

and twenty, than between nineteen and twenty-three, as they are being forced to do. The recent rapid development of graduate courses in American universities has, it furthermore seems, intervened to offset the pressure from beneath, and to help materially in finally arresting the upward tendency of the A. B. course.

The solution which our American problem is reaching is a practical rather than an ideal one, and is determined, as I have said, quite largely by the actual status and capability of existing institutions. The work of the school differentiates itself from that of the college rather in the methods of instruction and tutelage, than in the studies pursued.

It is furthermore not likely that the school and the college can fully succeed in accurately apportioning between themselves the parts of subjects to be taught. It cannot, for instance, be exacted of the schools that they shall teach the elements of all college subjects, nor can the colleges absolutely decline to teach the beginnings of all subjects which are taught in the schools. There are two considerations of weight in this connection: (1) The essential educational difference between advanced and elementary instruction in a given subject lies in the intellectual condition of the recipients of instruction. (2) The ideal of the *Einheitsschule*, whereby all pupils should follow the same preparatory course of study, is impossible of realization in our system. A differentiation must begin at best three years before the completion of the school course. It may, therefore, be regarded as incumbent upon the college to teach the beginnings of a college subject which is omitted in any one of the recognized courses of preparatory study. That is to say, so long as the elements of German are not required in every preparatory course, the college will be compelled to furnish introductory instruction in German—just as in Hebrew. There are, however, practical limitations in the application of this principle. Thus, there is no practical need for the teaching of elementary Latin in college. The elements of Latin are in the first place taught in all preparatory schools; and secondly, although the

Latin may profitably be included in every preparatory course, if it should not be, it is in the case of a preparation for a purely scientific or technical course, which would scarcely suggest the desire to begin this study after the pupil had entered college. That the case is different with Greek I shall attempt to show later.

The chief factors in the situation are, therefore, practically the following: (1) The length of the preparatory course and the average age of admission to college are not likely to be advanced beyond the point at present observed in the great mass of our New England and Middle States colleges; (2) the final and absolute division of labor between the school and the college cannot be found by assigning to the former the elements of the principal subjects taught in the latter; (3) the liberal or general college education of the future is not likely to regard the study of the Greek language as a *sine qua non;* (4) the practical necessities of existence in the preparatory schools require a limitation of the number of subjects taught, a discrimination between essentials and non-essentials, a strict formulation, and, as far as possible, a unifying of the courses of preparatory study; (5) the solution of our problem concerning the relation of the school and college curriculum is likely to be a purely American solution, determined by the facts of existing institutions and vested interests.

In the light of these conditions the inquiry naturally arises: May not the beginning of Greek be postponed until the college course, its place in the school curriculum being taken by one of the modern languages?

An argument in favor of this solution might make use of the following considerations:

1. The amount of Greek at present taught in the schools is a mere fragmentary beginning. The results from the same amount of time spent on a modern language would be much more complete and satisfactory.

2. The chief strength would be put upon Latin, and only one difficult language be learned at a time.

3. The study of Greek would be begun in maturer years, to

which the relatively recondite character of the study might be considered better adapted.

4. The learning of a modern language before Greek is thought by many to represent a more practical and, pedagogically, a more correct order.

5. Acquaintance with a modern language at this earlier point in the curriculum would be practically serviceable.

6. The colleges can furnish far better instruction in Greek, which is a strongly specialized subject, than can the schools.

7. The pupil's decision concerning the future direction of his studies can be deferred to a later period.

In spite of the important concessions made in my introductory discussion, the following considerations can be urged against a change:

1. The study of Greek is so closely related to that of Latin, both in matter and purpose, that they belong together. The introduction of a modern language is a move in the undesirable direction of dividing and scattering the curriculum, in place of giving it unity around a central stem.

2. A classical training is incomplete without Greek. Latin literature is essentially a Greek product. Greek is more complete in itself without Latin, than Latin without Greek.

3. If rightly taught, the two years' preparatory work in Greek, coming as it does after Latin has been well started, need not remain fragmentary in its results. The time should not be divided by the attempt to learn two distinct dialects, the Attic and the Homeric, but should be concentrated upon the effort to acquire a reading knowledge of standard Attic prose with the essentials of Attic grammar.

4. Any attempt to arrange the secondary courses of study must take serious account of the existing status and equipment of the schools. It is of no small importance for us, when we are adjusting the college requirements, to learn what the schools can teach and teach well. The number of schools in the State of New York taking the regents' examinations in Greek was in 1887, 87; in 1891, 159. Number in Latin, 1887, 205; 1891, 291. Percentage of increase: Greek 83 per cent.,

Latin 42 per cent. The number of papers sent to the office in 1891 was for the Greek 2.9 times as many as in 1887, for Latin 2.4 times as many. It is an undeniable fact that no American colleges have in the past few years enjoyed a more vigorous growth with more general signs of popular favor than Yale and Princeton, which have held rigidly to the old Greek requirement. The conditions in American education do not, to say the least, seem yet ripe for so violent a departure from the existing order as the discarding of Greek from the preparatory schools would be.

5. The question of the proper order for the learning of languages is one about which there is great disagreement. The argument has been conducted almost entirely on *a priori* grounds, and a settlement can be expected only on the basis of experience. A radical departure from existing standards in a great educational system should wait for more than *a priori* determinations.

In the meantime, however, and pending a settlement of current discussions, the following disposition of the whole language question in the preparatory scheme seems to me wise:

Let the preparation for the humanistic or literary courses of the college include two units of Latin and one each of either Greek, German, or French—the one unit of Latin to cover the grammar and Cæsar, the other Cicero, Vergil, and prose composition. Let the preparation for a scientific, *i. e.*, a strictly scientific, and not a so-called scientific or surrogate course, include two units of Latin and one each of French and German, or two units of German, and one each of Latin and French, the units of German and French to be determined on the basis of the Report of the Commission of Colleges in New England for 1889–90.

Let every college offer a course in elementary Greek extending through one year. With the greater maturity and the better linguistic training of the student, and with skillful leadership on the part of the teacher, it will be possible for the pupil to acquire in this time a good reading knowledge of simple Attic prose of the difficulty of Lysias, Xenophon, or Lucian.

The student who presented Latin and German at entrance may then easily make good his deficiency in Greek, and by doubling his Greek work in sophomore year,—as his advantage in a modern language will admit,—may be at the end of that year on even footing with the regular student in arts.

There is no more reason why a college should be ashamed to offer elementary Greek than elementary German, after it once admits to its doors students without Greek. For such students, elementary Greek is no longer a school study, but an advanced, recondite, or learned study as worthy of the college as elementary Sanskrit.

Since 1888 such a course in elementary Greek has been regularly and officially offered at Cornell University. For the year preceding (1887–88) it was given unofficially. The recent introduction of a similar course is reported from Tufts College. At Vassar the experiment has been tried for several years with marked success. Since the course has been given at Cornell it has been taken each year by from six to eleven students.

Different reasons have determined men in choosing it. Some came from schools where Greek was not taught, some had been forced by circumstances to an irregular or incomplete preparation in language. Some, either from a decision to enter the ministry or for some other reason, had determined late in their course to acquire a full classical education. Some wished to acquire merely the elements of the language as an aid in English studies or in the understanding of scientific nomenclature. Whatever their reasons they were always in earnest, and have generally accomplished in one year considerably more than the amount of the preparatory course. From one of the classes four are now classical teachers.

It must be clearly understood that this plan does not involve a trespass upon the territory of the preparatory schools. It does so now with more than the teaching of elementary German in the college. No one can take the course in elementary Greek who has not been admitted to full standing in the college in some one of the regular courses, *i. e.*, he will

have presented for admission instead of Latin and Greek, probably Latin and French, or Latin and German.

The plan here outlined furnishes, I believe, a solution for many of our practical difficulties in mutual understanding. The colleges assume merely the burden of a one year's course in elementary Greek. Students coming from schools where Greek is not taught are not finally debarred thereby from pursuing that study in college. Others who may wish to defer their decision of the question to a later period in their education are allowed to do so. Some who may prefer to acquire a modern language before Greek, are allowed the opportunity without loss of advancement. The smaller schools which find it difficult to maintain instruction in two modern languages beside Greek and Latin, can prepare their students, for instance, in Latin and German, with the prospect that French or Greek, or both, can be commenced in the earlier years of college. But looked at as a whole, the most important advantage of the arrangement would be that it affords opportunity for an experimental settlement of questions for which deductive reasoning has failed to furnish a universally satisfactory solution. In view of the vested interests of the existing order, and the strong grounds which can be maintained for its existence, it would evidently be unwisely and violently abrupt to remove Greek from the preparatory schools, but under the working of this plan the question would, we believe, in the course of years, find its own natural and satisfactory solution.

The materials for a solution of the difficult problems involved in the co-ordinating of school and college, as well as in the whole subject of the order and content of our liberal education, are rapidly collecting and arranging themselves; the finally acceptable solution must be expected at the hand of experience and of disinterested wisdom, and not from theorist or propagandist.

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III

THE CATHOLICS AND THE PUBLIC SCHOOLS

THE SIGNIFICANCE OF "TOLERARI POTEST"

Few decisions of the Propaganda have ever attracted so much of the world's attention as the decree *Tolerari Potest.* There was far more at stake than the welfare of the two schools in the snug little towns of Faribault and Stillwater. The Catholic nations of Europe were intensely interested, and Americans of every denomination or of no religious belief rightly thought that for them the outcome would have practical value. The battle was a fierce one. The best talent of the two opposing parties was engaged in this intellectual combat. And if incidentally friendships were broken and feelings wounded and charity and justice blunted, the outcome, at all events for the United States, is decidedly fortunate.

The full value of the decree, *Tolerari Potest,* is not brought home by a rendering of it into English. The value of a phrase, whether theological or canonical, is not always acquired from a literal translation of the same. Take, for instance, the definition of virtue as given by our theologians. They say it is "a habit (*habitus*) perfecting man's intellectual nature for the purpose of doing good." The English word habit does not give the full meaning of the Latin word *habitus.* So also with the translation of the decision of the Propaganda regarding the Faribault and Stillwater schools. *Tolerari Potest* is one of the formulas used by the Sacred Congregation in answer to questions proposed in a certain specific form. The Congregation is frequently asked whether or not such and such is lawful; whether or not such and such can be tolerated. It is careful to answer the query proposed—no more and no less. It answers: *licet,* it is lawful; or *non licet,* it is not lawful. It answers: *tolerari potest,* it can be tolerated, or *tolerari non potest,* it cannot be tolerated. It is the canonical, not the

classical meaning of the decision which is of value. That decision does not mean, "unrebuked," "unpunished" or "suffered as an evil." If ever a decision of a court were put beyond doubt as to its meaning, it ought to be the one under consideration. The *Civilta Cattolica*, the organ of the Jesuits in Italy, made a desperate effort to nullify the decision of the Propaganda. This effort induced the Archbishop of St. Paul to write to the Cardinal Prefect of the Propaganda so as to save the decision from being made useless or perhaps tortured into a condemnation. The St. Paul prelate interpreted it as meaning "fully allowed," and added, by way of explanation, that the decision completed the educational chart for the bishops of the United States. Archbishop Ireland's interpretation was not only accepted by Cardinal Ledochowski, but his Eminence almost went out of his way to declare that henceforth all attacks upon the Faribault plan must cease. Nothing could be more unequivocal than this. The decision is interpreted by the ecclesiastic most intimately concerned in the discussion, and the court which gave that decision declares his interpretation to be correct. The case was thoroughly understood in all its bearings, for Monseigneur Persico, the present secretary of the Propaganda, had in his diocese of Savannah, Ga., what is now known as the Faribault plan.

The decision is of great moment in the United States, for it puts Protestants and Catholics in a better position to minimize their differences, if not ultimately to come to an amicable working conclusion on the school question. In this decision, a principle is asserted, at least by implication. That principle is the acknowledgment of the right of the State in education. Although our leading theologians and canonists and philosophers have taught the right of the state to give secular education, still the endorsement of Rome was needed to silence the opposition and to neutralize the over-zealous efforts of those who were more Catholic than the Pope. There is sufficient room for the individual, the family, the state, and the Church to co-operate in education, and then there will not be too much knowledge nor enough culture in the world.

The Roman decision is an evidence that the Church and the state need not be in opposition on the school question, and that a conciliatory arrangement can be entered into. The right of the modern state to educate follows from its right to exist, and this right is intensified wherever universal suffrage obtains as in the United States. The office of the state in educational matters is even more than a right—it is a duty. The state is bound to promote the well-being of its subjects, and untaught citizens are an eye-sore and a menace to the community. The state must exercise its right, however, in such a way as not to infringe upon the rights of the parent, and in such a manner as not to encroach upon the conscientious principles of the individual. A man has a right to purchase a revolver to defend himself; but he has no right to discharge it indiscriminately to the proximate danger of the passers-by. Practical people admit that sufficient religious instruction cannot be given to the great majority of children at their homes and on Sundays in church. Those who are in earnest about religion, no matter to what denomination they belong, believe that some religious training should be given to children every day. It was a mistake to drive the Bible out of the public schools, but it would be a crime to violate the consciences of Catholic children with certain portions of King James's version which are opposed to Catholic theology. Intelligent men should have devised some other means of solving the difficulty. When people know precisely what they want, and what they cannot conscientiously surrender, the question of adjustment is not so hopeless. The Faribault plan promotes the rights of the children, gives the individual full scope, acknowledges in action the right and duty of the state, and does not refuse an opportunity to the Church to do its work.

It were midsummer madness to deny that among a large section of American citizens there is grave dissatisfaction with the present method of conducting our public schools. This dissatisfaction is not confined to Catholics. It extends to all who support private or denominational schools. Protestants

who maintain private primary schools, build colleges and universities, thereby show that they are not satisfied with those furnished by the state as they are at present conducted. The present plan of public education causes friction, calls forth ill-will, and works injustice upon those who are forced to maintain two sets of schools. Dr. John Bascom, an ex-president of the University of Wisconsin, points out that there is a violation of religious liberty in our present public school system. He writes: "To compel a Catholic to support a free school against his convictions is a sin against religious liberty of the same order as to compel a citizen to aid in maintaining schools in which sectarian instruction is given." The secularists are the only people who have reason to be satisfied with the state system as it is conducted at present. But it must not be inferred that the malcontents are enemies of the state system of education. The archbishop of St. Paul will be accepted by everybody as a fair exponent of the position of those who, while not satisfied with the state school as it stands, are certainly not its enemies. The following extract, taken from an address delivered before the National Educational Association two years ago, shows that he and those for whom he speaks would perfect and not pull down the state schools:

"Free schools! Blessed indeed is the nation whose vales and hillsides they adorn, and blessed the generations upon whose souls are poured their treasures! No tax is more legitimate than that which is levied for the dispelling of mental darkness, and the building up within a nation's bosom of intelligent manhood. . . It were idle for me to praise the work of the state school of America in the imparting of secular instruction. We all confess its value. It is our pride, and our glory. The republic of the United States has solemnly affirmed its resolve that within its borders no clouds of ignorance shall settle upon the minds of the children of its people. To reach this result its generosity knows no limit. The free school of America—withered be the hand raised in sign of its destruction!"

All serious cause for complaint should be removed from a

popular system of education. And if it cannot be entirely taken away, then it should be made as light as the circumstances permit. Concessions, where such can honorably be made, lead to conciliation, and conciliation to strength. The Faribault plan contains the germs of the final solution of the school question in the United States. It is sustained by a splendid public opinion in the town of Faribault itself. No clergymen of any denomination in that town are opposed to it; Faribault's three newspapers support it; the teachers in the school like it; the parents are pleased with the progress made by the pupils; the members of the school board are enthusiastic over the arrangement. A most intelligent member of the school board told the writer that the children made greater progress in secular branches during the past year than ever before in the same period. The very best of us do better when the world is looking on than when we work unobserved. There is equally trustworthy evidence that the children have made more progress in religious knowledge than is usual within one year. The reason is obvious. The pastor is not burdened with the task of collecting money to support the school, and the energies formerly devoted to finances are now given to the more congenial work of developing spirituality in the little ones. There are few problems which reasonable and honorable men cannot solve when brought face to face. The decision, *Tolerari Potest*, has given official sanction to a principle without which the solution of the school question in the United States were an utter impossibility.

JOHN CONWAY

NORTHWESTERN CHRONICLE,
ST. PAUL, MINN.

IV

PUBLIC SCHOOL PIONEERING IN NEW YORK AND MASSACHUSETTS

A REPLY TO A REPLY

Mr. George H. Martin read a paper before the Department of Superintendence of the National Educational Association, in 1891, on "Compulsory Education in Massachusetts," in which he attached a new or at least an unusual meaning to the term "compulsory education," and held that it was something which had resulted from an "evolutionary process," of which there had been six steps, viz., "Compulsory education, compulsory schools, compulsory certification of teachers, compulsory supervision, compulsory taxation, and compulsory attendance." Although it seemed odd that compulsory education should result from six steps, the first of which was compulsory education, still nothing would have been said about it if Mr. Martin had not insisted that "Massachusetts took each of these steps in advance of the other States—a little in advance of her sister States in New England, far in advance of all the others."

This led me to prepare an article for the EDUCATIONAL REVIEW[1] in which it was attempted to prove that "America is indebted to the Dutch rather than the English for the essential principles of the great free-school system of the country, and that in the several most important steps which have marked the establishment and development of that system, New York and not Massachusetts has led the way." Mr. Martin replied in the REVIEW for June last, and I am invited to rejoin to his second paper.

My friend has manifestly heard and heeded the advice of the lawyer to his student: "When the law is with you and the facts against you," said he, "dwell on the law and avoid the

[1] April, 1892.

facts: when the facts are with you and the law against you make the most of the facts and skip the law: when both the law and the facts are against you, throw up all the dust and make all the noise you can." With a hard case on his hands, Mr. Martin applies the prescribed treatment with heroic energy and much skill.

It is hardly surprising that he should introduce his article by a quotation from Washington Irving's *History of New York by Diedrich Knickerbocker*, as that novel is apparently the leading authority in Massachusetts on the history of New York. When he manifests irritation and makes a show of indignation, when he talks about courage "beyond his [my] convictions" and "the sweets of authority," he is only throwing up dust and making a noise. When he takes my incidental expression "the common people" to mean the lower of several classes of people, he is unreasonable. He might as well construe "the common schools" to mean the lowest of several grades of schools. When he quibbles about the term "professional supervision," he reveals the remoteness of the rear guard from the main column of the army. When he insists that a school supported in part by the rate-bill system is a public school in Massachusetts—as he does on page 43—and not such in New York—as he does on page 41—he is strangely inconsistent, and his inconsistencies are too close together. When he says that a common school system was established in New York in 1795 and abandoned in 1800, because in the former year the State commenced levying a State tax for encouraging and aiding common schools, and in the latter year discontinued that policy for a short season, it might with as much truth be said that Massachusetts has never had a common school system, for she never has levied a State tax for schools. When he says "a public school is a school established, supported, and controlled by the people acting in their political capacity, as a civil body politic," he constructs a definition which may fit the first Massachusetts schools, but not one which is accurate, for it does not go far enough. If the people, by majority vote, undertook to es-

tablish schools to promote political or sectarian ends, their acts would not be effectual, and if they were, such schools would not be "public schools" as we use the term. And for precisely that reason, among others, it is contended that the first Massachusetts schools were not public schools. When he shouts in his climax, "Massachusetts is willing to learn; she is willing to teach; but she is not willing to be misrepresented," it must be admitted that his assurances of willingness are both novel and gratifying. This discussion may possibly bear even unexpected fruits. But his apprehensions are groundless, for Massachusetts has a history so proud and so frequently repeated that misrepresentation to her injury is not possible. When he exclaims, "The people of New York have always shown a willingness to be governed: they began that way. The people of New England have as signally manifested a determination to govern themselves: they began that way," the court sees that he is becoming hysterical, and is forced to suggest that he must calm himself or he will hurt his cause and bring ridicule upon his client; and the opposing counsel smile audibly. *Isn't* it funny, this talk about leading the way in *compelling* this, that, and the other thing, in one breath, and this universal and violent objecting to be governed at all in the next?

Eliminating expressions of this character, which are not material to the issue, and it cannot be said with truth that there is much remaining of Mr. Martin's reply. The greater part of the remainder is devoted to the difficult task of proving that our common school system was derived from England, although England never had a common school system.

In my former paper I adduced the facts which it seems to me must abundantly prove to any mind open to the truth, that the essential principles of the free school system had their development in the Netherlands before the settlement of America, and that these principles had never had any recognition in England. The purpose of this was to point out how and why those principles had their first enunciation in America among the Dutch Colonists at New Amsterdam instead of among the English Colonists in Massachusetts. Mr. Martin's

reply to this is ridicule of the quality and circumstances of the Dutch schools. Regardless of that, the vital principles were there; and, moreover, those schools seem to have borne fruit, for Mr. Motley says: "It was a land (1608) where every child went to school, where almost every individual inhabitant could read and write, where even the middle classes were proficient in mathematics and the classics, and could speak two or more modern languages, and where the whole nation with but few exceptions were producers of material or intellectual wealth." [2]

Since writing my article Harper Brothers have published a work in two volumes by Mr. Douglas Campbell, under the title, *The Puritan in England, Holland, and America*, which is a most scholarly and notable contribution to American history. Having no knowledge of Mr. Campbell's views at the time I was writing, it gives me much satisfaction and not a little pride to find my position so strongly sustained by so eminent a scholar, who has given to the subject the best work of his life. At the greatest pains and with the most conscientious fullness of detail, Mr. Campbell studies the origin and traces the growth of many of our distinguishing governmental institutions. He takes up the National Constitution, the checks upon the President in declaring war and peace and in appointing judges, the organization of the National Senate, our State Constitutions, religious toleration, freedom of the press, wide suffrage, written ballots, *free schools for girls and boys alike*, the independence of the judiciary, the absence of primogeniture, the recording of conveyances, public prosecutors, the rights of persons charged with crimes, etc., and conclusively shows that they could not have been derived from England, since nothing of the kind existed there at the time the American colonies were founded, nor for a long time thereafter. He shows that similar institutions did exist in the Netherlands, and slowly follows the channels through which they came to be incorporated with our national life.

If the necessity of continuing the discussion of the origin

[2] Motley, *History of the United Netherlands*, IV: 432.

of the free public school idea were otherwise apparent, the appearance of this notable work would relieve me, for it must inevitably be accepted as the leading authority upon the subject. But regardless of what may be said upon that question, it is not the real issue with Mr. Martin, and no one knows it better than he. His magnifying and enlarging upon that remote and involved question is only to cloud the real issue. It ought not to succeed.

Mr. Martin first asserted that the growth of the common school system in this country had been marked by six steps, and that these six steps had been taken by Massachusetts "slightly in advance of the other New England States and far in advance of all the rest." This was what provoked a challenge; it is the real issue. He supported his assertion by an array of words, in good form, but not by facts. He was confronted by innumerable facts, which prove the converse of his proposition. Many of these facts were of recent date. Where this was not so, he was cited to the authorities, and they were authorities which he could not question. All could be easily verified or overthrown. In reply, he occupies his space in an attempt to change the issue and in discussing matters which are very remote, very old, and only indirectly related to the subject. In but one instance does he charge me with an erroneous statement of fact, and that is not a material fact, and he quotes me incorrectly before he convicts me of inaccuracy. He says: "Mr. Draper says the schools were so little thought of that Governor Winthrop makes no mention of them in his journal. Strange that he should not have discovered this historic passage," and then he sets forth a well known quotation from Winthrop's journal concerning schools. The paragraph to which this refers was as follows: "There is nothing to indicate that the starting of the (Boston) Latin School was *at the time* considered a matter of consequence. Governor Winthrop's journal treats of everything which the leading man of the colony considered at all important—of many things which seem to us very unimportant, but it contains no reference to *this* school." It is submitted that

this would be commonly understood to mean that the Winthrop diary made no mention, at or near the time, of the fact of the organization of a Latin School in Boston. That statement is entirely accurate. The passage is not susceptible of the construction put upon it. It suggests a problem in mathematics. If Mr. Martin construes so clear a statement of so simple a fact, within thirty days after it is written, as loosely as this, how much allowance must be made for the construction which he places upon the facts and utterances of two hundred years ago?

But let us come right to the heart of the question. The issue is whether Massachusetts was the first to make education compulsory, schools compulsory, the certification of teachers compulsory, supervision compulsory, school taxation compulsory, and attendance compulsory. This depends not upon assertions, but upon facts. Mr. Martin has written two papers upon the subject. His assertions have been denied and he has been challenged to point out the facts which sustained them. He occupies space with words that are foreign to the real inquiry, and then says that "space will allow but few citations." How fortunate! His mind is directed to innumerable facts which overthrow his contention. These facts are of comparatively recent date, and may be easily investigated. If they are true his case is gone. He is an able man; he has ample time; he is full of resources and all the books are at his hand. Yet he is unable to say aught against them.

He is told that "In the Plymouth Colony there was *no school of any character for fifty-two years after the settlement; that the town had increased to twelve villages before any school was started, and the school then started was not an elementary school, but a Latin school.* He is cited to the passages in the original Plymouth records which show it. He says not a word in reply. He is shown that New Amsterdam, although not so strong in people or resources as Plymouth, had a dozen schools within this period, and that among them was a public school open to all children, supported by public moneys, and taught by an official schoolmaster. His only answer is ridicule for

one of the public schoolmasters for being poor, as it incidentally appears that he supplemented his meager salary by other employments. He is pointed to innumerable facts which show that the early Massachusetts schools were sectarian schools, only for the attainment of a religious and denominational end. He ignores these facts.

He is cited to Winsor's *History of Boston* and the *Proceedings* of the Massachusetts Historical Society in proof of the fact that girls were not admitted into the schools of Boston until 1789, and were not received for full hours until 1828. This is a hard fact; the statement could not stand a minute if untrue. He does not deny it. He throws dust in the air by asserting that a "hamlet on Cape Ann," in 1723, voted a tax for "a free school which is for all sexes," and with a show of exultation exclaims, "these people were not enunciating doctrine, they were living it." Well, no citations are given, and I am not very familiar with Cape Ann. Moreover, Cape Ann is not in dispute. It is quite possible that in a hundred years a village somewhere had made some show of advance. That would not be too much to expect. But how about *Boston?* Here was the chief town, at that time with twenty thousand inhabitants, and not a school with a girl in it. They were *neither* enunciating doctrine nor living it.

Mr. Martin claims that Massachusetts was the first to adopt "compulsory certification of teachers." He offers no proof. He is told that teachers are both licensed and employed by the same authority in his State, that this authority is not a professional authority, that this is not the "certification of teachers" as the term is now understood throughout this country, and that therefore there is not, and never has been, any "certification of teachers," compulsory or otherwise, in his State. He says nothing further on the subject.

Likewise he claims for Massachusets the honor of introducing the "compulsory supervision" of schools. He is told that the term "supervision" has come to have a well-known technical meaning throughout the country; that it does not refer to the general charge of the schools by trustees or com-

mittees, but to special care by professional experts or superintendents. Even taking his view of what constitutes supervision, he is shown that trustees were provided for in every town in New York in 1812 and not in Massachusetts until 1826. But there is a difference of very much greater weight. For over eighty years the law of New York has provided for the paid professional supervision of every foot of her territory. It is true that her county commissioners are elected at popular elections, and that some of them lack in fitness; but it is also true that four-fifths of them come to the commissionership from the teacher's desk and are well qualified for their duty and zealous in its discharge. In addition to this, there is not a city in the State, and not a village of five thousand inhabitants, that has not a special superintendent who is a professional teacher. His time must be exclusively devoted to supervision, and he is in large part paid from the State treasury. The State Department of Public Instruction, with ample supervisory anthority, was created in New York in 1812: the State Board of Education, with authority to gather statistics and give out information, was not established in Massachusetts until 1837.

There is no State supervision of the schools in Massachusetts, because in its view that would be an interference with the high prerogatives of the towns. Local supervision is wholly voluntary. In the rural districts there is no supervision whatever. Town committeemen (butchers, bakers, and candlestick makers) are allowed a per diem compensation for visiting schools: if a superintendent is employed, this is cut off! It is to the interest of the persons who are in position to control the situation to prevent professional supervision. No provision was made for superintendents in cities until 1860.

Then, too, the whole system is voluntary. Most of the larger villages and some of the cities are without superintendents. I happen to have at hand the report, dated December 21, 1891, of Dr. William A. Mowry, as superintendent of schools of the city of Salem, Mass. It is a city of thirty thousand inhabitants and it may be recalled that it had some-

thing of an early history. Dr. Mowry commences by saying, "I find by the file of reports that the office of superintendent of public schools was established in 1866. The first superintendent was Jonathan Kimball, who held the office six years. The next incumbent was Mr. Augustus D. Small, who served the city for eight years. *There was then a vacancy for ten years (1880 to 1890).* The office was re-established by you [the School Committee] last spring." What becomes of compulsory school supervision in Massachusetts?

As to "compulsory taxation," Mr. Martin was pointed to the fact that his State raises no tax for general school purposes and that it compels no town to do so—that towns are only empowered to raise such sums "as they judge necessary." He was shown on the other hand that New York commenced raising a State School tax in 1795 and required towns to raise as much more; that this policy has been upheld ever since; that she started her permanent State School fund in 1805; that of the twenty millions expended in the State last year for schools, four millions were raised in the State tax levy and distributed on the principle that all the property of the people must contribute to educate all the children of the people; that upon this principle New York City gave nearly a million of dollars more than it received, and that this went to help the rural districts. Yet he has no word to say in support of his original proposition, nor yet any word in criticism of the statements which entirely overthrow his claims.

Mr. Martin makes one point which he would be entitled to make if it was in issue, and of which he may well be proud in any event. That is the early abolition of the rate bill in Massachusetts. It was of course an important step in the complete evolution of the common school system; but when he suggests that there were no common schools so long as they were in part supported upon that plan, he is only "making a noise."

That Mr. Martin should advance such claims as he did in his Philadelphia paper, is not surprising only because it is not

unusual. It is the habit of Massachusetts to claim everything in sight educationally. The habit has fed and fattened upon the fact that no one has felt disposed to contest such claims, no matter how extravagant they might be. That Mr. Martin fails, under the light of investigation, to sustain his claim, as to the "six steps" which he laid down as the landmarks of the development of the common school system, is not his fault. He has covered his retreat and cared for his baggage as well as anyone could, indeed better than most men could. In fact, it is surprising that artistic treatment could make so much out of such a dearth of material.

Regardless of popular conceptions, the work of fervid orators and alleged historians, nothing becomes clearer to the mind of the investigator than that the common school idea was not of English origin, and that Massachusetts, which was exclusively of English origin, was slow in taking the steps which lead to its complete development. At least three things have occasioned this slow progress:

First, Massachusetts inherited the educational plan and policy of the mother country, which was to educate the few but keep the masses in ignorance for fear they would learn their rights and demand them.

Second, Massachusetts was settled for religious purposes and became a religious State. She had a state Church and the Church dominated the State. Such schools as there were, were subordinate to the Church, and were established to feed and support the Church. There can be no common schools where there is not absolute religious toleration. It is the essence and life-blood of the common school system. It is absurd to talk about common schools maintained by a "civil body politic" dominated by a state Church, which made civil rights depend upon membership in that Church, which inflicted fines and imprisonment for failure to attend its services, and which banished, whipped, and hanged any who opposed this plan of civil government or proposed to worship God in another way. This condition of things not only obtained in Massachusetts, but it continued, in all its vigor, for full a hundred years.

Indeed for more than two hundred years did that colony and State, true to its English parentage and traditions, carry on the contest against the freedom of religious opinion and the independence of the Church. Three decades of the nineteenth century had waxed and waned before she wrote the disestablishment of the Church and a guarantee of religious freedom in her constitution. All of her sister States, in and out of New England, had preceded her in taking this great step. New York, on the other hand, had inherited an entirely different system. She never knew a state Church, she was never even tinctured with religious intolerance, and is entitled to the honor of being the first organized government of the world to write in her constitution the sacred pledge of absolute religious freedom. In which soil might the underlying principles of the common school system be expected to find the more ready and stronger support?

Third, the town-meeting fetich. Local self-government is well, so long as it governs well and accomplishes the necessary results. General self-government is just as well, so far as it may be necessary to accomplish results. The doctrine that the public schools are to be left exclusively to the support and management of town meetings, regardless of local circumstances, when towns have no authority not delegated by the State; that the State, which alone can exercise sovereign authority upon matters relating to education, shall not exercise its authority, because that would be an interference with the alleged prerogatives of towns, is a doctrine which must necessarily impede the general administration and retard, if not prevent, the complete and healthful development of the public schools. In a State where all alike participate in forming the State government which alone can exercise authority upon most matters of public concern, Boston and Springfield should give of their wealth to the support of schools in the farming districts. But it is not so important that the State shall collect money to help the weaker sections, as that it shall make sure that every section provides suitable school buildings, employs none but qualified teachers, and uses the best methods of work

which have been devised anywhere. Universal experience has shown that this authoritative oversight, this leadership by the only agency of government which has the right of leadership and the power to accomplish things, is vital to general educational activity and the uniform efficiency of the public schools.

It ought to be, and probably is, surplusage to say that the writer of this article has only admiration for the dominant qualities of the men and women who first settled Massachusetts, and that he is profoundly impressed with the magnificent part which that commonwealth has had in the development of our country. He sees in the very beginnings of that State that lofty and heroic *character* which has at all times been manifest among her people, and which has made her what she has been and is, and which has led and enabled her to exert the influence which she has and does. This feeling, common to all patriotic Americans, is intensified in his case by the ties of blood, for his ancestors were residents of Roxbury while John Winthrop was governor, and now lie buried within the corporate limits of the City of Boston. Of all that rightfully belongs to that age and that people, he is as jealous as anyone can be. If any need or desire to be told what it is that belongs to that people, he would be very glad on proper occasion to undertake the task. But he regrets the blind infatuation which, to the disparagement and wrong of others, ascribes to those early settlers works of great national importance utterly inconsistent with the dense superstition and the misguided, even bloody, religious intolerance which are known to have dominated their lives. And no less does he regret the supreme self-satisfaction which leads its possessor to lose position in the army of progress without knowing it, and prevents him from learning that he doesn't know it.

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V

REFORM IN THE GRAMMAR SCHOOLS

AN EXPERIMENT AT CAMBRIDGE, MASS.

Unthinking persons who look upon education in the United States suppose that the profession of teaching is much like other professions; that certain standards are set, a certain professional spirit maintained, by the body of teachers, just as it is maintained by the body of physicians or of lawyers; and, especially, that the methods of teaching and the choice of subjects are in general determined by the teachers. A brief experience upon the Cambridge School Board has convinced the writer that this view is mistaken. There are two parts of the educational machinery; the first relates to the selection of teachers, the second to the subject-matter of education, the choice of studies and of text-books, the preparation of courses of study, and the fixing of tests of proficiency. In the first of these departments the teachers have little influence, except in a very few professional schools, particularly those of medicine. Teachers usually have no voice in the selection of their fellows; the standards for admission into the profession are set and administered by persons who have often never been teachers and sometimes know very little of teaching. The school boards, and the trustees of secondary schools and colleges, hold the keys to the gates which open to the teacher's career.

It might be supposed that at least in the technical matters of curriculum and division of the time of pupils, the teachers would have sway. So it is in many of the institutions of higher learning; college faculties and the teaching force of endowed schools settle their own problems. This is not the case with the public schools. If an analysis be made of the distribution of powers in the educational commonwealth, the most influential persons are the school superin-

tendents: they are not always secure of their tenure, but they can usually carry through, immediately or gradually, any scheme of reform which does not involve the expenditure of more money, and which can be carried out with the teachers whom they are allowed to employ. Perhaps the most encouraging thing in the recent movement for the improvement of grammar school education is the interest taken by the best and most active superintendents throughout the country.

Next in point of power come the school boards. In some of the large cities these are political machines; in Cleveland the board was so bad that by State enactment a new organization has been brought about in which the superintendent is made almost autocratic: but in many cities, and in most smaller places, the school board is controlled by well-meaning and intelligent men. In every board, good or bad, are some members well acquainted with the schools and eager to improve them. It is in the power of school boards to force reforms upon unwilling superintendents, but not to carry out any reform without the aid of the teachers.

The third moving force in the public schools is the "educators." These are sometimes men who have spent their lives in public school work, sometimes private individuals, sometimes the principals of great secondary schools, or the presidents of colleges. They have better opportunities than most superintendents and members of boards of education to observe the workings of American education in all parts of the country and to compare them with foreign schools of the same grade. It is their mission to arouse the public to the need of reform.

The fourth source of educational energy is in the public at large. In the Northern and Western States there is little difficulty in raising money for good schools, and people are sincerely disappointed if they find their children going on year after year with little progress. If the public can once be convinced that the expenditure of time and money on the public schools ought to produce a greater result, then reform can be brought about; but the details will always be settled primar-

ily by the superintendents and in a less degree by the school boards.

Fifth and last come the teachers, who are in the unfortunate position of exercising great responsibility without much opportunity to make their preferences felt. So far from constituting the moving force of the schools, they are helpless links in an endless educational chain, picking up one batch of children after another and carrying them in a direction which they often do not approve. So far from the teachers forming a profession they are more like the employees of a great railroad. They have not built it, they do not control it; they may manage their train, but that train moves at a prescribed pace over a prescribed route, carrying a prescribed number of little passengers in each car.

In Cambridge, as elsewhere, we must reckon with all these forces. The conditions are probably more favorable to a reform in public school education than in many other cities. The number of school children is now between eleven and twelve thousand out of a total population of about seventy-five thousand; of these children not far from six thousand are in the grammar schools; for the six thousand pupils there are about one hundred and thirty teachers. The school buildings are good, though by no means equal to those of many Western cities; most of them have but twelve rooms. The average expenditure per pupil throughout the schools is $18.72 for salaries, and about $5.00 a year for other expenses, including free text-books and supplies furnished by the city at a cost of about $1.20 a year for each pupil. The supervision is less elaborate than in many cities; up to a few months ago one superintendent without assistance performed the whole duty. All the elements of school government have been unusually well disposed toward making some change in the grammar schools. The superintendent, Mr. Francis Cogswell, himself once a principal in one of the grammar schools of the city, has long been convinced that the schools are spending too much time and accomplishing too little. The school board acts entirely without reference to political parties, and although a series of

accidents has brought in a large number of new members during the last two years, they have been members willing to spend the necessary time to acquaint themselves with the needs of the schools. The element of warning and good counsel has been especially well represented in Cambridge. The officers of several teachers' associations are found among the Cambridge teachers; and President Eliot of Harvard University has freely raised his voice in criticism of the grammar school system in general and of the Cambridge grammar schools as an illustration of that system. It is difficult to say how far the public at large has been interested in the proposed changes; there has certainly been no protest. The teachers, as soon as they understood that no change would be made without their co-operation, and without their having an opportunity to discuss the details and to suggest amendments, have taken a most gratifying interest in the whole matter.

As soon as the newly constituted school committee was organized in January, 1892, a motion was made for the appointment of a special subcommittee to examine into the whole question of the time and subject-matter of the grammar school curriculum. The committee embraced two of the most experienced and conservative members of the board besides some younger and more impulsive spirits. It adopted the plan of holding a kind of invitation meeting. Thus, into one session were introduced superintendents and teachers from those neighboring cities in which new methods and new subjects had been introduced. At another time the masters of the grammar schools were invited to present their views with regard to shortening the grammar school course. Again, a delegation of teachers was called in to meet several experts in the new subjects which it was proposed to introduce; and all the members of the school board were at one time or another invited to sit with the committee and to take part in its deliberations. The purpose was that the committee might clearly understand the difficulties in the way of reform, and might put itself so far as possible in the place of those by whom new methods were to be carried out. Most of

the objections were thus obviated by changes in the scheme, or at least had been considered, before report was made. The result of the committee's labors, therefore, met with gratifying approval, and their recommendations were adopted, with a few verbal changes, precisely as they were made.

It was not difficult for the committee to make up their minds as to what ought to be accomplished in a grammar school education. Children go to school less to learn than to learn how; less to acquire a stock of ideas than to put ideas together. School training is very like gymnasium training. People do not raise weights for the sake of driving clocks with them, but in order that they may raise heavier weights hereafter. Throughout American education too much stress has been laid upon acquisition, and too little on the development of power. What the Cambridge school board desires is to make out of its boys and girls practical, sensible men and women able to meet and decide the questions which come to them. But we have two very distinct classes of pupils in the grammar schools: children who do not expect to go beyond the grammar schools and children on their way to college. Of course the schools, the academies, high schools, colleges, and universities are all engaged in different branches of the same pursuit; of course they must work together. Cambridge makes careful and very expensive provision for the preparation of boys and girls for college. Should the city go below its Latin School and make any sort of special provision for future college students in the grammar schools? In the minds of the committee it has seemed more important to organize as good a course as possible for those who stop at the end of the grammar schools. It seemed likely that an improved course would also carry children farther on the road toward higher education; but the motive has been the desire to furnish the best education possible to those who will have no other education; to make the people's schools more popular because more effective, and to carry more children to the end of the grammar school course.

Two problems now presented themselves which seemed to contradict each other. The experience of other cities and of other countries seemed to show that the Cambridge grammar school course is too long. On the other hand, the schools have been urged in the last three or four years to cover more ground. To shorten the course seemed possible: to increase it seemed possible; could it both be shortened and increased? A few weeks ago a young lady who was taking a civil service examination in Cambridge, looking forward to a position under the city government, made the following written statement: "When a child I went to a primary school in Cambridge. As there were four teachers and four rooms, I was four years in passing through that school." It is literally true that, although the primary course requires but three years, every child who went through that particular school was obliged to take an extra year because it was more convenient than to break the four rooms up into three grades. Of late years such stifling applications of red tape have not been permitted; nevertheless, until a few years ago it was not possible for any child, however quick, to finish a grammar school course in less than six years, although in Western cities the same ground is commonly covered in five years. Experience has shown that six is by no means a magic number; eighteen per cent. of our grammar school pupils spend at least seven years on the way. Some years ago the school board sought to remedy this artificial system by authorizing masters to advance pupils by a process of "skipping." A bright child might thus be carried from the fourth direct into the second grade, leaving out the third grade; or, more commonly, small classes of "skippers" have been formed to do the work of three years in two. About thirty per cent. of the grammar school graduates have taken advantage of this system, and about five per cent., have "skipped" twice. The result has been a practical variation of the course from four to seven years, according to the ability of the pupil. By an easy amplification of this principle it seemed possible to make the same allowance for individuals, but to make the course more regular and to avoid the gaps

left by the "skippers." This has been accomplished by a system devised by Mr. Cogswell, and now, it is believed, about to be put into effect for the first time. Two grammar school courses are to be arranged side by side, one of them to require six years and the other four; but each of these courses is to be subdivided into two periods or forms. The combination of the lower quick-moving form and the upper quick-moving form makes a four years' course. The combination of the lower quick-moving and the upper slow-moving, or *vice versa*, makes a five years' course. The combination of the two halves of the slow-moving division makes a six years' course. Thus, without reorganizing the schools, it is possible to make every reasonable allowance for the abilities and opportunities of children. A child who loses a year from sickness may make it up by going into the quick-moving division; a child who proves too delicate for that work may be transferred to the slower division; and it is expected that such transfers will be made at any time according to the discretion of the masters.

Two objections may be suggested to this scheme. One is that it will be necessary for teachers to have two grades in one room. This is not by any means a misfortune. In the country district schools it is well known that the younger children often learn the lessons of the older from hearing their recitations. The influence of one grade of children upon the other in city schools is often equally decided and valuable. The other objection is that the system produces irregularity and confusion. One of the chief educational officers of the Commonwealth of Massachusetts has recently said: "Unity in these things is desirable, not only because unity in results requires it, but because the largest and truest progress can be secured in no other way. There should be unity also in the methods of teaching." So long as the Almighty does not make his children uniform, whether young or old, a system founded upon regularity must be evil. The attempt to compress children who have been the same number of years in school into the same grade, pursuing the same studies, is an

attempt which must result in silting up the inferior minds and in blunting the superior. The ideal system of teaching would be that of the old district schools and of some of the best private schools—to form a class whenever half a dozen children could be found of about the same degree of advancement, and to keep several classes in one room, for the sake of the mutual influence of the children on each other.

Nevertheless, it must be admitted that the scheme requires more care, thought, and supervision than an ordinary graded school. There are two ways in which much of the difficulty may be avoided. One is the so-called departmental system, by which one teacher will teach but one or a few subjects; it has been adopted in the Workingman's School in New York and elsewhere, and one of the masters of the Cambridge Schools desires to make trial of it. While it seems likely that this system, which is familiar in the gymnasia in Germany, will eventually be introduced, the experience of the schools which have tried it in this country is rather adverse. What the children gain in efficiency of teaching they sometimes lose from a weakened discipline. A different step has, therefore, been taken in Cambridge, to provide for the difficulty of handling the carefully classified pupils. In the large buildings teachers without grade are to be appointed, who can make up small classes of children deficient in particular subjects and bring them forward more rapidly than would be possible in the ordinary schoolroom. By a temporary shifting of teachers this will make it possible to look out for individual needs and to relieve the schools of the children who have been blocking the way by staying longer than was good for them. One such teacher is already at work in Cambridge, and others are likely speedily to be appointed. An advantage of the system is that it practically increases the capacity of the buildings, and is thus a saving to the taxpayer.

A third objection to the whole system ought to be considered, because it may be made weighty in the minds of the public. It is that such variations are undemocratic. True democratic equality consists in the right of every man to make the most

of his natural powers. No social system can be arranged which does not take cognizance of the difference of ability between man and man. The proposed system is distinctly in the interest of poor but bright children, who may be brought forward more rapidly and may be better trained if some account is taken of their special abilities. It is the duty of the public schools to promote equality; but they promote it best not by denying advantages to the more fortunate part of the community, but by giving them and pressing them upon the less fortunate.

The Cambridge schools are thus fully committed to a plan by which it is hoped that the average time in the grammar schools will be five years or less. It has not been the purpose to diminish the amount of study at present required, because experience has shown that it may be well performed in five or even four years. The next question which arises is whether the same amount of energy and study may not be made more interesting and more stimulating, by a rearrangement of work and the introduction of new subjects. The present curriculum of the Cambridge schools is simple, and, on the whole, reasonable. It is certainly not excessive in amount. Reading is kept up through all the six grades, authorized readers continuing through the eighth grade, and standard English authors being introduced in the seventh grade, half way through the course. Spelling continues through four of the six grades with a spelling book, besides the correction of written exercises from time to time. Formal grammar is taught with a text-book in all the grades. Geography runs throughout the course with poor text-books, and with more or less of the senseless superposition of maps upon artificial geometrical figures. Arithmetic continues throughout all the grades, but the more difficult and technical subjects are set aside to be added only at the discretion of the masters. This is, then, the work of the six years: reading, spelling, grammar, geography, and arithmetic, with the minor subjects of physiology, a little history, music, drawing, penmanship, and the use of the dictionary. Little is here included besides the

essentials of an intelligent existence; pupils now leave the grammar schools able to read, to write, to cipher, to parse, with some notion of the earth's surface, and, it must be said, with considerable ability to express themselves cogently in the mother tongue. Instruction in the use of the English language has much improved in recent years, and receives great attention.

It is not apparent that any of these subjects can be omitted; it does seem, however, that a part of the six years might somehow be released. A great deal of time is spent in reviews. An eminent surgeon said of anatomy, that it was a subject which you could not know until you had learned and forgotten it seven times: possibly grammar masters have some such principle in mind. The chief purpose of the reviews has been, however, not to recall what had been learned by bright scholars, so much as to teach pupils what they ought to have learned in the grade below. In Cambridge, as throughout the country, those scholars who least respond to the teacher get most of her time. The four and six years' plan is likely to relieve the schools by separating out the scholars who really need review, so that the quicker division may go directly into new subjects. Then again, the committee became satisfied that a great deal of time had been spent to little purpose in getting classes ready for examinations, and the school board has voted that henceforth there shall be no stated examinations, and that promotions shall be made upon the record of the term work; these two reforms, the putting bright pupils ahead into the subjects which they are able to take up and the saving of unnecessary review preparatory to examination, will leave the schools more time than they have at present. Another saving is possible by simplifying the work, particularly in arithmetic; there is a tendency on the part of teachers to emphasize this subject by giving long, complicated, and numerous problems instead of more simple examples. The same saving result may be had by simplifying the study of language; it does not seem necessary that intelligent children should for five successive years be taking up

the principles of grammar. Surely, what is necessary to remember may at last be learned; whatever training comes from such subjects may at last be had; and the pupils' minds may sometime be turned to fresher and more interesting topics.

When five years ago the suggestion was first thrown out that the grammar schools were teaching too little, it was met with incredulity, with denial and personal abuse. It has now been repeated, developed, and illustrated by so many eminent teachers, administrators, and heads of great systems of public education that the community accepts it, and even the teachers acknowledge it. In fact, the opposition to the proposed reform has sprung chiefly out of misapprehension; when the grammar school system was criticised, the grammar school teachers felt that they were attacked; whereas they, like the rest of the community, were sufferers from a system for which they could not be held responsible. The most important recommendation on the subject was that made November 6, 1891, by the Association of Colleges in New England. Although the members of that body were all engaged in college teaching, their recommendation does not appear to spring from any desire to make the grammar schools feeders for higher schools; they are interested in the public schools as citizens, and many of them as fathers of public school children. They recommend that algebra and geometry be introduced into the grammar schools. At present the Cambridge schools include in their mathematical studies mental and written arithmetic throughout the six grades, and bookkeeping. The bookkeeping has in most cases been of a very simple kind, and it has been thought wise to abandon the pretentious and undeserved title and to substitute the term "Simple personal and business accounts." What shall be done with the time so gained for the children by presenting the subject of arithmetic in a simpler manner, has been made on the whole the principal subject in the grammar schools, because of its practical applications, and of the excellent training to the mind resulting from its precision. Yet in the present study of arithmetic there has been, on the

whole, little development of the reasoning powers; under poor teachers the rules have been learned and applied by rote. There are two other mathematical subjects in which training is the larger element. They are algebra and geometry. The processes of algebra are closely akin to those of arithmetic; hence, if a choice must be made it seems desirable to take geometry, because its point of view is different, and because the exactness of logical reasoning makes up for some of the loose habits of thought which children get in other subjects. Geometry, properly taught, is one of the most interesting of subjects, and it may readily be allied with drawing and with mensuration; the schools all teach in a more or less regular fashion the properties of geometrical forms, and the relation to each other of lines and angles. If this part of the school study is combined and organized and made to advance from year to year, it will lead up by the most natural steps to the study of simple geometrical problems. No subject is more likely than geometry to interest the great majority of children. In one of the towns near Boston in which that study has been introduced into the schools, the boys have developed an interesting practical application; they go about and offer to calculate the height of their neighbors' houses, by means of their simple instruments and formulæ. The Cambridge school board has therefore adopted the study of geometry as obligatory in the grammar schools. Some of the teachers hesitated on this point, and some of them preferred the teaching of algebra. The board has therefore authorized any master who chooses to introduce algebra also in the last year in connection with arithmetic.

Next come reading and language. Every well-educated man needs the knowledge of some language beside his own; in America there is not the same practical necessity for the use of modern languages as abroad. We have but two neighboring countries in which English is not used, Cuba and Mexico; and few Americans have any occasion to use Spanish. Still, nothing surpasses the study of foreign languages in effect upon one's own vocabulary and mode of speech; and

no man who desires to use the thoughts of current writers on literary or technical subjects can get on without French and German. Hence it has been suggested that the study of some language should be introduced into the grammar schools, and the only convenient tongues are Latin, French, and German. Any one of these may be pursued with advantage by American children, as they are by boys and girls of the same age in foreign countries; while it may be no argument to say that because a subject is studied abroad it ought to be studied in America, we surely cannot admit that American children are less capable or develop less rapidly than those in foreign countries. If an American boy and a German boy were cast away upon the same desert island, the American would take care of himself and save his comrade's life; but if an American young man of twenty is put side by side with a German young man of twenty, he finds himself inferior in the power to deal with new problems in science, in logic, or in the workings of the human mind; whereas with his better start and surroundings he ought to excel. His greater experience in practical matters, in self-protection, in money-making, ought not to interfere with skill in the use of his reasoning powers. The difficulty in the introduction of languages is not that they are too hard for the pupil, but that they are too severe for the taxpayer. Three-quarters of the children in the Cambridge grammar schools could get a great deal of good out of any one of the three languages. About one-twentieth of them would be much aided in their preparation for college; every scholar who had a foreign language would understand the use of English better. The difficulty is that foreign languages are not so easily taught as spelling, arithmetic, and geography; good teachers in these branches are difficult to find for any institution; and if introduced on a large scale, languages require costly supervision. Hence it is much easier to introduce a new language into a town having one graded school than where there are a dozen large schools. No recommendation has therefore been made on this subject, but the committee have suggested important

reforms in the teaching of English. In the first place, formal grammar lessons, including learning of parts of speech, and parsing, are to be confined henceforth to the last two-thirds of the grammar course. In the second place, set spelling lessons are to stop at the end of the first two-thirds of the grammar course. In the third place, and this is one of the most important reforms, in all grades extended extracts from standard English authors are to be read side by side with the authorized readers; and in the latter part of the course they are to supersede the readers. Many of the modern school readers are excellently selected, and have interesting matter of good literary flavor; but children, except in the last year of their course, have had almost no opportunity in school to become acquainted with the great English and American writers. Possibly the choppy school readers are responsible for the growing desire of Americans, in their reading, to descend from short books to short articles and thence to short paragraphs.

The next change suggested is in the teaching of geography. Political geography and history are henceforth to be treated together as branches of the same subject. Physical geography is to be expanded and to be grouped with science. The details of the new course have not yet been worked out, but they will include, as fast as the means of the board will allow, the use of maps, apparatus, and models. Children are to be taught to look on physical geography as a part of the development of the crust of the earth, then to connect with the contour of the earth's surface the movements of the winds, and finally to observe the effect of physical causes on the settlement and development of nations.

The last new subject to be introduced is physics. Here it has been much more difficult than in the other subjects to frame the right kind of course and to fit it into the grammar school system. The choice of the board has been between two systems: they may, as in many cities, teach children to notice flowers, trees, rocks, and stones, to count their fingers and toes and to compare them with the hoofs of horses and

cattle, and then may call that science; on the other hand, they may choose some one branch of science and teach it in such a way as to give children their first ideas of scientific methods and scientific accuracy. After considering all possible subjects, the board has finally resolved to introduce experimental physics, but this recommendation is not to take effect for one year. The difficulties are serious, but not insurmountable. In the first place some part of each building must be set aside for a little laboratory, and most of the buildings are already well occupied; it is believed, however, that the corner of an assembly room, a lobby, or an unused cloakroom may be furnished with a few rough appliances sufficient for the purpose. The next difficulty is the lack of apparatus; it has been estimated that to fit up the rudest laboratory, so that it would be sufficient for the use of a grammar school, would cost from one hundred to two hundred dollars. Fortunately, however, Cambridge has a manual training school, the boys in which are sufficiently skilled to make most of the necessary apparatus, and the superintendent of that school has promised to help on the system by constructing the necessary pieces next year, at the cost of materials. The third difficulty is the lack of trained teachers, and it is to be met by providing special normal instruction in physics during the coming year. Of all the subjects proposed this is probably the most desirable, both for its training and for its practical applications. No subject goes so far in suggesting to children to look below the surface for the cause of things; and no study is more likely to be useful to boys and girls who are hereafter to use their hands and their heads in any kind of trade which calls for manual skill.

The four new subjects thus proposed are English literature, geometry, physical geography from a new standpoint, and physics. The Cambridge teachers are certainly equal to the average of their profession. Before appointment most of them have had a high school education, a normal school education, and an experience of one year, preferably in the Cambridge training school for teachers, which is a part of the school sys-

tem. Yet not many except the masters are at present equal to teaching geometry, physics, or physical geography. Some special provision for training in these subjects would have been necessary at the public expense, and it is doubtful whether the scheme loaded down by such a necessity could have been accepted at this time. At this point, Harvard University most generously agreed to furnish, at its own expense, normal instruction for the Cambridge teachers in the three subjects named. It is a public-spirited act which shows that the corporation of the university understands how interdependent common school and college education are. The details have not yet been settled, but practical courses are to be arranged by professors who have a reputation as teachers and as experts in their subjects. The effort will not be made to go through with the teachers precisely the work which they are to repeat to their scholars. In each subject the instructor will attempt to train the teacher to understand the subject and to meet the difficulties which arise in schools. In arranging programmes, lists of experiments, etc., the schools will have the benefit of the judgment not only of these professors, but of the high school principals and teachers of mathematics and science.

It is apparent that the conditions for a reform in the grammar schools of Cambridge are unusually favorable. The city has been placed in the midst of a long discussion of the subject in which some of the grammar school teachers have been engaged. The superintendent has been unusually interested; the school committee have given an amount of time and consideration to the subject which could not be secured every year. The teachers are interested, and the university has simplified the whole problem by providing for the necessary special instruction of the teachers. Furthermore, it has not been attempted to make all the changes which have been suggested by the New England Association of Colleges and elsewhere. Algebra has not been made obligatory. No new language has been introduced, and but two sciences, physics and physical geography. Most cities could undertake these

reforms without serious additional expense; but every school board must make up its mind that the saving of time does not mean that less money must be expended on the schools, but that a better education may be furnished for the same money. It is estimated that in Cambridge five hundred scholars are spending an unnecessary year, at a total cost of about nine thousand dollars; but under the new system most of those five hundred children would simply add another year to their present schooling. The result will be an incalculable advantage to the community, but not a lessening in the tax rate.

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VI

THE NEW EDITION OF JOWETT'S PLATO[1]

Plato was a many-sided man; he was not only a metaphysician, but also a literary artist. On every page of his works one may see indications of that love for poetry which inclined him in his early years to devote himself to the composition of tragedies. He always enjoyed a lively dramatic situation, and could not easily surrender one which presented itself, even if it were not needed for his argument. His aims and interests were so many that scholars are not agreed as to the chief aim of some of his most important dialogues. The *Gorgias* is said to treat of rhetoric, but it gives no rhetorical definitions or precepts; the author's real purpose seems to be rather to defend Socrates and himself against the charge of folly and unpatriotic conduct in not engaging in political life. This indefiniteness of aim is still more marked in the case of the *Phædo*, which is generally thought of as an argument intended to prove the immortality of the soul. But by what steps does Plato introduce this argument? The friends of Socrates meet at the prison on the morning of his last day of life, that they may pass this day with him, just as they have done all the others of his month of imprisonment. They have no special message or question or subject for conversation. As they enter he is just released from his chains. He rubs his leg where the fetter had been, and says, "How strange a thing this is that men call pleasure! How curiously related to what they call pain! The two will not come together, but if a man gains one of them he is pretty sure to get the other also. I had the pain from the chain, but now I have the pleasure of relief. If Æsop had thought of it, he would have made a fable

[1] The Dialogues of Plato: Translated into English, with Analyses and Introductions, by B. Jowett. In five volumes. Third edition, Revised and corrected throughout, with Marginal Analyses and other Additions, and an Index of Subjects and Proper Names. Macmillan & Co., New York and London, 1892. Price, $20.00.

to represent pleasure and pain as contending but bound together." The mention of Æsop reminds one of the company of Evenus, a poet who had asked a question with regard to Socrates' putting into verse some fables of Æsop. This leads to a message to Evenus, closing with the injunction to follow Socrates as soon as possible. This, in turn, raises the question why Evenus should desire to follow the dying man; and leads to the answer that the true lover of wisdom will recognize the fact that he cannot attain the object of his desires in this world, but only in the next. Then, for the first time, after fourteen or fifteen closely printed pages, the argument begins to show the probability of the soul's existence after death. The discussion could not be represented as less premeditated. Some scholars believe Plato's aim in the *Phædo* to have been to teach his doctrine of ideas, or his method of philosophical investigation; others, to give an account of his master's last days on earth, or to show how a good man should and might die; while the popular view of the dialogue is that it was intended to prove the immortality of the soul. No more complete literary contrast could be desired than that between Aristotle's discussion of the question whether virtue is natural or the result of teaching, in the second book of the *Nicomachean Ethics* and Plato's treatment of the same question in his *Meno*.

Whatever scholar, then, as translator, is to interpret Plato to the general English-speaking public, must appreciate his author both as a literary artist and as a metaphysician, and must be a thorough master of the Greek language.

A translation of Plato is of special interest in this country, for the Plato-cult has flourished here as nowhere else. In no other land is the day of the "terrestrial descent of the soul of Plato" regularly and piously commemorated. Nowhere else have a company of thoughtful men and women met weekly for a series of years, for the study of Plato's thoughts and meditation upon them. Nowhere else has a journal like the *Platonist*, or *Bibliotheca Platonica* been devoted to studies of the great master and his successors, Proclus, Plotinus, and

the rest of the Neo-Platonists, of whom the ordinary Greek scholar or student of philosophy generally knows little or nothing at first hand. Popular interest in Plato is shown also by the wide sale of the little volumes of an anonymous translation published by Charles Scribner's Sons.

The first edition of Jowett's translation of Plato, on its appearance in 1871, was recognized at once as a great achievement. Dr. Jowett was then regarded as the first Greek scholar in England. He had been Regius Professor of Greek at Oxford for more than fifteen years, and had been distinguished for his theological writings, which bore ample witness to his broad spirit. He had recently been made Master of Balliol College. The translation was in vigorous, idiomatic English, and if philologists sometimes grumblingly complained that it did not always show them Jowett's view of the grammatical construction of the Greek sentence, they less often asserted that the thought of the original was not reproduced in the translation.

The third edition, now before me in five stately volumes, bears out the statement of the title-page, that it is revised and corrected throughout. Few paragraphs have remained exactly as they were in the first edition. The translation has been made more accurate in its relation to the Greek, and yet more idiomatic and more forcible in its English. The revision of the translation may be appreciated best by the comparison of two brief passages in the two editions. And first, from the first book of the *Republic*, 336 B. The first edition of the translation reads as follows: "'What folly has possessed you, Socrates?' he said with a roar. 'Why do you drop down at one another's feet in this silly way? I say that if you want to know what justice really is, you should answer and not ask, and you shouldn't pride yourself in refuting others, but have your own answer; for there is many a one who can ask and cannot answer. And don't tell me that justice is duty or advantage or profit or gain or interest, for that sort of watery stuff won't do for me; I must and will have a precise answer.'

"I was panic-stricken at these words, and trembled at the

very look of him; and I verily believe that if I had not caught his eye first I should have been deprived of utterance; but now, when I saw his fury rising, I had the presence of mind to keep my eye upon him, and this enabled me to reply to him."

In the revised edition of the translation this becomes: "He roared out to the whole company: 'What folly, Socrates, has taken possession of you all? And why, sillybillies, do you knock under to one another? I say that if you want really to know what justice is, you should not only ask but answer, and you should not seek honor to yourself from the refutation of an opponent, but have your own answer; for there is many a one who can ask and cannot answer. And now I will not have you say that justice is duty or advantage or profit or gain or interest, for this sort of nonsense will not do for me; I must have clearness and accuracy.'

"I was panic-stricken at his words, and could not look at him without trembling. Indeed, I believe that if I had not fixed my eye upon him, I should have been struck dumb; but when I saw his fury rising, I looked at him first, and was therefore able to reply to him."

The following is the latest form of the last sentence of the *Phædo*: "Such was the end, Echecrates, of our friend; concerning whom I may truly say, that of all the men of his time whom I have known, he was the wisest and justest and best." How much better this is than the first form: "Such was the end, Echecrates, of our friend, whom I may truly call the wisest, and justest, and best, of all the men whom I have ever known."

The new edition completely supersedes the old. The Introductions to the Dialogues have been much enlarged. Many paragraphs and sentences have been added. Dr. Jowett has evidently felt the inclination to add to what he had written, and yet appreciated the limits of the case, for the new matter is almost all in very concise form. These introductions contain all that is needed as the basis for an ordinary, good appreciation of Plato, and to most they will be more useful than the translation itself. The introduction to the *Republic* covers

231 pages, closely printed, giving an analysis of Plato's work, with helps toward the appreciation of it on the literary and philosophical sides, including a criticism of the views presented, and a discussion of More's *Utopia* and other schemes for a happy state. The introduction to the *Laws* is a trifle longer than that to the *Republic*. In general, about half of the matter in this edition is introduction and index. The index is one of the best parts of the work. This was entirely lacking in the first edition; the second edition had an index of about seventy-five pages; the index of the third edition covers 175 pages, and contains much that is interesting. Two of its pages are devoted to the subject of education.

Dr. Jowett appreciates the position of Plato historically, and does not attempt to gloss over any of the master's errors and fallacies. He does not think himself called to claim inerrancy for him. He often reproduces Plato's views and arguments in the language of modern discussion, and endeavors to draw out the great lessons which Plato teaches for all time. The following extract is characteristic (II. 301): "It is scarcely necessary to repeat that Plato is playing 'both sides of the game,' and that in criticising the characters of Gorgias and Polus we are not passing any judgment on historical individuals, but only attempting to analyze the 'dramatis personæ' as they were conceived by him. Neither is it necessary to enlarge upon the obvious fact that Plato is a dramatic writer, whose real opinions cannot always be assumed to be those which he puts into the mouth of Socrates, or any other speaker who appears to have the best of the argument; or to repeat the observation that he is a poet as well as a philosopher; or to remark that he is not to be tried by a modern standard, but interpreted with reference to his place in the history of thought and the opinion of his time."

Ten pages of the preface set forth the duties and difficulties of a translator as clearly as they have ever been stated.

That the translator has not always succeeded in following his own principles, and that oscitancy has, at rare intervals, overcome the scholar, is only a mark of our common humanity.

Every lover of Plato who has made himself familiar with the original, must expect to find occasionally that the translator has failed to catch and express the exact tone or trait which had seemed peculiarly delicate and beautiful. More rarely he will find what is an obvious slip. For example, near the beginning of the *Apology*, 20 B, Dr. Jowett translates a question of Socrates, "Is there anyone who understands *human and political virtue?*" Few, if any, untaught readers could guess that this means, "Is there anyone who is skilled in imparting the excellence which is proper to a man and a citizen?" On the first page of the *Apology* we read: "From me you shall hear the whole truth; not, however, delivered after their manner in a set oration duly ornamented with words and phrases. No, by Heaven! but I shall use the words and arguments which occur to me at the moment." In this translation a bit of balance of style is lost. In the second of the two sentences as well as in the first, Socrates is made to refer to the arrangement of his arguments as well as to the particular words which he is to use. In the *Gorgias*, 455 B, we read, "At every election he ought *to be chosen* who is most skilled," where the connection indicates that the meaning is, "The one who is most skilled should give the advice and *do the choosing*." The scene of the *Gorgias* is laid at the house of Callicles, by the translator; but President Woolsey, in his excellent edition of that dialogue, half a century ago, showed clearly that the dialogue was not held at the house of Callicles, but probably in some public room connected with one of the palæstræ of Athens.

These may serve as illustrations of trifles which have escaped the translator's notice. Others might be enumerated, but the discussion of many would require considerable space.

In the *Republic*, 365 C, "Since then, as *philosophers* prove, appearance tyrannizes over truth," Plato means not *philosophers* but *poets*, as the dialect and meter of the quotation prove; and he is simply using *οἱ σοφοί* (*the wise*) in the sense in which it is regularly used by Pindar.

But while the Platonic scholar will be dissatisfied with

some of the details of this translation, and will still cling to the original Greek, few men in our country have such perfect acquaintance with the dialogues that they cannot learn much from this work. The ordinary scholar and reader may be sure that we have no better translation of any literary monument of classical antiquity, and that the introductions offer the mature judgments of a scholar whose privilege it has been to give many years to the study of the works of one of the noblest and greatest men and philosophers of the world's history.

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VII

THE TEACHING OF MATHEMATICS, (I)

ELEMENTARY SUBJECTS

If all our institutions of learning, from the primary school to the college, were asked what is the hardest road that the learner has to travel, the answer would everywhere be, that to mathematics. Poor Marjorie Flemming struck a sympathetic cord in the breasts of every generation since her time when she declared that "the multiplication table is a horrible and wretched plague; you cannot conceive it; it is what nature itself cannot endure." What the child feels in learning the multiplication table, the older pupil feels when he comes to proportion or algebra, and the college student when he first attacks analytic geometry or calculus. It must also be admitted that, in the typical case, the results of teaching are as unsatisfactory to the teacher as the subject is repulsive to the learner. The great mass of pupils in our public schools go through a series of arithmetics, one after the other, and six months after the last one is finished, few could pass an examination in any of its difficult parts. The same rule holds in the higher branches. Few, indeed, are the college students of mathematics who, a year after they had laid aside their books, could reproduce any important part of the subjects they have spent so much time in trying to master.

My rather limited observation has led me to suspect that we, in this country, find the difficulties in question even greater than do Europeans. I have found young men from abroad to be generally more expert in the applications of arithmetic and elementary mathematics than young men of corresponding talents and tastes educated among us. While the latter might have equal capacity in the mastering of the subject in the abstract, they do not seem to have learned it in the practical way in which it is taught abroad. I may pos-

sibly be mistaken in the general impression, derived in many ways, that the system of education pursued in Europe, especially in Germany, looks more to interesting the pupils, and developing their knowledge on subjects with which they are familiar than our own does. But if I am not, the question arises whether we cannot, even in such subjects as arithmetic and algebra, do more to let the pupil see their relation to everyday matters.

The instruction in advanced mathematics is so different from that in the elements of the subject, that I shall divide what I have to say into two papers, one treating of elementary, and the other of advanced, subjects. The keynote of what I have to say about elementary teaching, especially that of arithmetic, is that we should devote more attention to embodying mathematical ideas in a concrete form. If we look carefully into the difficulties which the beginner meets with, we find that they can be summed up in the single statement that he has no clear conception of the real significance of the subject which he is working upon. His figures and algebraic symbols do not represent to his mind anything which he can see or feel; the operations upon them are not even representative of any operations with which he is otherwise familiar. So long as this state of things continues, all his work consists of mere formal processes, which have nothing to correspond to them in the world of sense. Everyone who has studied the minds of boys or men, of different orders of intelligence, must have noticed how readily and correctly persons of the lower orders will reason about concrete things, even when they could not comprehend any abstract statement. I remember once quoting to a resident of South Africa the remark of an American philosopher upon the low condition of some African races, as exhibited in their inability even to count beyond half a dozen. "There is not one of them," he replied, "who has ever been in contact with civilization, on whom you could pass the wrong change for a shilling."

It is, I believe, very generally conceded that all mathematical conceptions are, in the first place, acquired through the

senses. By no possibility could the conception of a straight line be conveyed to a person who has never seen anything to suggest it, nor can the idea of relations in space be acquired except by first observing them through the senses of touch and sight. It may be true that a single observation will in each case be sufficient to give the necessary conception, and it is hence concluded that when the pupil has once made this simple observation, he has acquired the necessary ideas of number and space, and nothing more is necessary to enable him to apply the conceptions. Indeed, some go so far as to maintain that it is better not to call in the aid of the senses in teaching such a subject as algebra, but to aim at its presentation in the same abstract way that the professional mathematician employs when he represents curves and surfaces by algebraic symbols. Even those who would not overtly maintain this view may practically act in accordance with it, by teaching arithmetic and other elementary subjects simply as operations upon abstract numbers, or the solution of imagined problems.

But conceding that a single experience will suffice for the conception, it does not follow that it will suffice to enable the mind to apply it in reasoning. To know what a thing is may be one thing, and to handle it quite a different thing. I therefore suggest the question whether the teaching of elementary mathematics may not be greatly facilitated by the study of mathematical relations among sensible objects. A practice has come into vogue among professional mathematicians which illustrates the difficulty I have mentioned, and the way in which it may be avoided. The relations among imaginary quantities in algebra are so much more complex than those among ordinary real quantities that they evade the direct comprehension of even the most expert mathematician. The result was that no progress was made in the study of a subject now at the basis of a large part of mathematics, until Gauss and Cauchy conceived the happy idea of representing the two elements which enter into an imaginary algebraic quantity by the position of a point on a plane. The motion of the point

embodied the idea of the variation of the quantity, and the study of the subject was thus reduced to the study of the motion of points; an abstraction was replaced by a concrete representation. The result was that, in the conception of writers on the subject, position speedily took the place of quantity; the word "point" replaced the word "value," and in this way an extended branch of mathematics was constructed, which would not have been possible had the abstract variable of algebra not been replaced by the moving point of geometry. If the greatest mathematical minds feel such an aid to be necessary to their work, why should not a corresponding aid be offered to the farmer's boy, who is engaged, year after year, in struggling with numbers, of whose relations to sensible objects he can have no clear conception?

I propose to do this by showing him an arithmetic and geometry of sensible objects.

One thing I have found by actual trial: a class of pupils who have begun to weary with their arithmetical studies can be greatly enlivened and interested by a few such exercises as I am about to suggest. They can be extended and varied indefinitely, as the experience and inventive power of the teacher may suggest. It must not be forgotten that their object is not to teach the pupil anything, in the ordinary sense, but only to make the operations of arithmetic a work of the senses. I therefore give only a few examples of the various kinds of such exercises.

Sensible Addition and Subtraction—Following the instructor at the blackboard, draw two lines on your slate. Now add the shorter to the longer (by drawing at the end of the longer a line equal, by estimation, to the shorter). Subtract the shorter from the longer (by cutting off from the longer a segment equal to the shorter).

It must be remembered that measurements are not necessary in these exercises; it is perhaps rather better to avoid them, in order to train the pupil in estimating magnitudes by the eye.

Now draw three lines, A, B and C. Add them together in

the same way. If you now add them together, but put the line C between A and B, would the total length be the same? Why do you think so?

Multiplication and Division—Draw a short line. Now draw others which shall be respectively two, three, four, and five times the shorter one. Make them as nearly correct as you can by the eye. Then divide the longer ones into parts, and see if these parts are equal to the shorter one. If they are very different, try it again. How much longer is the fifth line than the second? How much longer is the fifth than the third? Than the fourth?

Draw a long and a very short line. How many times do you think, on looking at it, that the short line is contained in the long one? (For this exercise, the lines are drawn by the teacher on the blackboard. After several pupils have made their guess, he spaces off by cross-marks on the long line, distances equal to the short one, in order to see how nearly they are correct.)

The exercises may now be extended to estimating the relative sizes of squares and rectangles, and the methods in which they can be compared. The relative values of a cent, a dime, and a dollar may also be shown by lines or surfaces.

Fractions—Draw a line. Divide it into three equal parts. What is each of those parts called? Divide the middle part into two equal parts. How will the mark which does this divide the whole line? How much, then, is a third, and half a third?

Divide another line into four parts. What are each of those parts called? Divide one of those parts into three other parts. What fraction of a fourth will they be? What fraction of the whole line will they be? Then how much is one-third of one-fourth?

To multiply anything by a fraction, means to take that fractional part of it. Then if you multiply this line by five-twelfths, what will be the result? Apply this by drawing a line on your slate some two inches long, or on the blackboard a foot or two in length. Now multiply the line by three,

(draw a separate line three times as long). Now by two, on a separate line. Now by one. Now by two-thirds. Now by one-half. Now by one-fourth. Show that two-fifths of one-third is the same as one-fifth of two-thirds. To do this, draw a long line. Divide it into thirds, and divide each of these thirds into fifths. Show where one-fifth of two-thirds will come in. Then draw an equal line; divide it into fifths, and each of those fifths into thirds. Show where the corresponding product comes in.

Ratio and Percentage—Draw two unequal lines. What two numbers represent their ratio, as near as you can estimate? Draw two lines in the ratio of three to five. Draw a line, A. Now under it draw another, B, longer by one-seventh. Under that draw yet another, longer by B than one-seventh of B. Which is the greater, the excess of B over A, or of C over B?

Draw two lines such that half of the one shall be equal to one-third of the other. Show that three times the one is equal to twice the other.

Draw two lines, A and B, both short, but of different lengths. Now draw a third, C, considerably longer than either. Now draw a fourth, D, which shall satisfy the ratio A : B :: C : D.

Such exercises as these need not consume much time; ten minutes a day, three times a week, would probably be enough to devote to them. It would be a question for the judgment of the teacher, whether to go through the whole course at once, or to take each subject when that subject was reached, in regular order.

This practice in dealing with tangible things is not, and ought not to be, confined to the simple graphic representation of quantities. I would substitute for at least one-half the "sums" given in arithmetic a course of calculations of sizes, weights, and values of familiar things. The dimensions of the schoolroom would afford an excellent basis for a number of exercises. The number of square feet in the floor and walls, and the number of cubic feet in the room, would both be easily determined. It is no drawback that the height of the

ceiling might not be very readily measured. An application of similar triangles could be made, which would afford a preliminary lesson in surveying. A piece of board, sawed in the shape of a right triangle can be held against the wall of the room, with its longer side horizontal, and its hypothenuse pointing at the edge of the ceiling. When this position is found, measure the height of the lower acute angle from the floor, and its distance from the wall on which the hypothenuse is being pointed. We shall then have the proportion, as the base of the triangle is to its height, so is the distance of the acute angle from the wall to the height of the wall above the base. This height being added to the elevation of the base above the floor would give the height of the ceiling.

The weight of the air in the room would next be calculated, on the supposition that each cubic foot of air weighed an ounce and one-third. The weight of the walls and of the whole building; the number of bricks in them; the weight of the air in each room; the pressure of the building per square inch on its foundation; all afford material for a number of computations quite within the power of every boy who is learning arithmetic, and vastly more interesting than the complicated problems in all sorts of business which form so prominent a feature of our advanced arithmetics.

I should extend the same system to the teaching of elementary physics; our text-books of physics have not enough of concrete examples. It would be very interesting to know how many students who have been through a college course in physics could compute the quantity of water that would be evaporated by the heat generated by the combustion of a ton of coal, or how many cubic feet of air could be warmed in the same way. There is no good reason why this kind of elementary physics should not form a part of our arithmetics, except that adherence to traditional customs which is so marked a characteristic of the district school, and the prejudices of the so-called practical man against everything scientific in education.

In the actual solution of arithmetical problems the system

can be advantageously extended by requiring a graphical solution of special problems. By a graphical solution I do not mean the working out of a numerical result of lines, but the drawing of lines and figures to represent the magnitudes. Take, for example, the subjects of multiplication and proportion. It could be shown in the former that, if we represent a man by a line half an inch long on the slate, the union of six men could be represented by a line three inches long. If one man could in a day plow a field represented by a line half an inch wide, and an inch high, then the amount of land which the six men could plow in any number of days would be represented by a rectangle upon the line representing the six men, and as many inches high as there are days. Then if the question arose, if five men could plow a field in eight days, in what time could nine men plow it, the pupil would begin by representing the work of the five men during eight days in the way indicated, and then showing that when the base of the rectangle was extended so as to equal nine men, the height would be shorter in the same proportion.

No doubt when the instruction was carried on in this graphic way, and applied to each actual question, the class could not do more than half as many sums. But they would be done understandingly; and it will doubtless be conceded that the doing of a single one understandingly is more than the equivalent of doing a half dozen without understanding.

I would preface the study of geometry by a similar set of exercises, so that the pupil would be studying sensible geometry, and performing geometrical operations by the aid of his senses. This would not be learning geometry merely as a collection of facts, nor would it be abstract reasoning on the subject. The method and the object to be attained will be seen by some examples.

Make an angle, which you think is half of a right angle. Now bisect it. Make another, and trisect it. Now make another set of angles, gradually increasing up to nearly the sum of two right angles. Keep on increasing the angle so that it shall run over two right angles. Continue to increase

until the moving side of the angle is nearly back into coincidence with the other. Now bisect all these angles in succession by a continuous process. Notice what becomes of the bisector when the angle is greater than two right angles.

Draw a figure of any sort, and put a straight line through or near it. Now show how the figure will look if turned over on the straight line as an axis.

Define and draw a figure which shall be symmetrical as to an axis.

In how many ways can a square be applied to itself so as to coincide with its original position?

From a vertical line draw a number of horizontal straight lines, parallel and equi-distant, but in arithmetical progression. How will the other ends be arranged? If the lines, instead of being in arithmetical progression, had been in geometrical progression, what sort of a line would be that passing through their free ends?

After a number of preliminary exercises like these it can hardly be imagined that the *pons asinorum* would offer any difficulty, but, if it would, the pupil could be still further helped on by causing him to actually make material triangles of pasteboard, in order to illustrate some of the theorems.

In beginning algebra, there would be fewer new conceptions to be thus materialized, since all the operations with which it is concerned have already been met with in arithmetic. But there is yet another desideratum to be accomplished, namely, the familiarizing of the pupil with the use of symbolic language. The earlier this is done, the better. Even in arithmetic he may often find an advantage in representing quantities by letters. The pupil should devote a portion of each lesson to such exercises as this: What is the cost of m pounds of beef, at x cents a pound, and p pounds of butter, at y cents a pound? True, there is nothing here that is ordinarily called an exercise, since there is no arithmetical or algebraic process. But in learning a language something else than exercises is necessary, and algebra is a kind of language; at least a peculiar kind of language is used in it. To be proficient, this lan-

guage must be learned like any other unusual and foreign language, by practice.

It may be true that in adopting the system set forth in the recent paper, the pupil would not get through any one book more rapidly, and would make no better show of his knowledge at an exhibition or examination. The advantages to be gained would be fewer courses, through fewer details of arithmetical applications being necessary, and a greater facility in the application of arithmetic, algebra, and geometry to practical questions.

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VIII

THE DUBLIN TER-CENTENARY

Professor Mahaffy, in a recently published paper, has called attention to the number of festivals commemorating the beginnings of universities that the closing decades of the century have witnessed. Those of Bologna, Edinburgh, and Dublin in Europe, and of Harvard and Columbia in our own country, will most readily occur to everyone. The latest of them all, the ter-centenary celebration of Trinity College, Dublin, was by no means the least interesting, and in what may be called, without hyperbole, the splendor of its spectacular side, it was certainly one of the most successful. Long preparation, a most judicious grouping of events, and unlimited resources, combined to make upon the mind of all who were privileged to be present during the four days of its continuance, an indelible impression. Even the weather, which in Dublin is proverbially fickle, lent unbroken sunshine to the festival, and the imposing processions of the gorgeously begowned dignitaries from all quarters of the enlightened world, as well as the delightful garden parties and outdoor receptions, escaped with their mediæval magnificence unmarred by the intrusion of an umbrella.

An especial piquancy was added to the celebration for those who were alive to the delicate *nuances* of a situation in which the dignitaries of a college more Tory in its traditions and sentiments than any at Oxford, were necessarily associated with the representatives of Irish Nationalism in the center of a Parnellite city, and at the very hour of the most exciting election in recent English history. Considering the intensely bitter feeling that has in the past resulted from the political strife in Ireland—a bitterness comparable with that felt in the South at the close of our own Civil War—one could not have been surprised if some note of discord had occasionally broken

in upon the harmony of the festival. But the generous pride of Irishmen in what is, after making all possible deductions, a truly national institution, the heartiness of Irish hospitality, and the national tact and generosity of the Irish people, buried the memory of political and social feuds, so that Parnellite, McCarthyite, Gladstonian, and Tory knew for the time no rivalry save that of being foremost in the proffer of innumerable courtesies to the university's guests. From the Viceroy, Lord Zetland, and the learned provost, Dr. Salmon, representing the ultra-Conservative sentiment, to the Lord Mayor of Dublin, who was at the very moment of the celebration, a candidate in the Parnellite interest for Stephen's Green, only one spirit was shown—a spirit of harmony, courtesy, and unbounded hospitality toward the hundreds of foreign delegates and guests.

The body of delegates and guests was truly representative of all departments of letters and science. The list is far too long to give, but such honored names as those of Professor Blass of Kiel, Professor Robinson Ellis, Sir James Paget, Professor Max Müller, Professor Maertens of St. Petersburg, Professor Butcher, and Sir Frederick Leighton may be selected as characteristic of the catalogue that filled some forty pages of a Directory printed by the University. Lord Dufferin represented the Royal University of Ireland, as its Rector. Lord Wolseley wore the scarlet of his doctorate over the still more brilliant uniform of a British general. Professor Vambéry of Buda-Pesth gave a Kossuth-like exhibition of fervid Hungarian eloquence at the presentation of the addresses, on which occasion President Gilman of the Johns Hopkins University won a most cordial greeting from the vast audience by his graceful, genial, and sympathetic little oration. Mr. Henry Irving, whom the University honored with its degree in letters, was naturally a popular favorite with the undergraduates, who bestowed upon him the somewhat terrifying compliment of a "chairing." General Francis A. Walker, Professor O. C. Marsh, Professor Isaac Hall, and Dr. T. S. Billings were prominent

among the American scholars who received the Dublin doctorate.

It is now too long after the event to recapitulate the details of the ter-centenary—the two great processions of the university officers and the invited guests, the brilliant balls at the Mansion House and in Leinster Hall; the receptions by the Chancellor, Lord Rosse, by the Provost, by Lord Wolseley, and by the Earl (now the Marquis) of Zetland; the garden party by the Fellows; the conferring of honorary degrees, the presentation by the foreign delegates of congratulatory addresses; the various banquets, dinners in hall, concerts, and theatrical exhibitions; and the graceful private hospitality shown by the hosts to the various guests of the university. Apart from the brilliant social functions, it was an occasion that emphasized to many visitors how false the appellation of "the Silent Sister," has become as applied to Dublin University! To know such scholars as Lecky, Dowden, Tyrrell, Bury, Palmer, Purser, Salmon, and Mahaffy was to see a living refutation of a name to which the Acting Public Orator, Professor Tyrrell, in conferring the degrees, made a neat allusion in these words:

"Meministis sine dubio nomen quondam inditum huic Academiæ, *Sorori Tacitæ*. Sit nunc tacita, sit loquax, sit qualiscunque; saltem hoc fausto die, cum tam electum gratulantium chorum sui honoris causa confluxisse videt, ut Latonæ apud Vergilium sic nunc illius

"Tacitum pertentant gaudia pectus."

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IX

EDUCATION IN FOREIGN PERIODICALS

Present-Day Handwriting

MR. JOHN JACKSON, IN THE "LONDON JOURNAL OF EDUCATION"

"The handwriting of the age is unsatisfactory. So say the press and the public. The advance in handwriting—if advance there be—has not kept pace with the progress of education. Notwithstanding all our increased facilities in superior teaching, buildings, appliances, and apparatus, the penmanship of the age has not improved. Some, who are admittedly observant and accurate judges, declare it has deteriorated. Complaints are loud and far spread. Even in the United States, where everyone can read and write, we are told that 'not one person in a hundred writes a decent, legible signature'! Following hard upon this startling declaration—or revelation—comes the echo from a London daily: 'It is quite an exception to come across a letter that, even with a certain amount of leniency, can be said to be written at all legibly or distinctly.' Then, again, in strict accord with these, we have the independent statement of a city magnate at the Mansion House 'that fully ninety per cent. of the young men who applied to him for situations wrote with a slovenliness altogether inexcusable.' This personal experience is true and typical in the case of hundreds of our merchants and professional men, who throw nineteen out of every twenty such letters of application into the waste-paper basket unread, if not unopened.

"But, besides these testimonies, what does every morning's post bring to each of the readers of this article? Are not the illegible scrawls that reach and torment us daily, sufficient to convince one of the lamentable state of things—a state of things, be it remarked, that indicates inefficiency or defect somewhere. Surely, such torture is not an intolerable necessity! But we anticipate.

"An examination of the caligraphy of the present day will reveal some curious facts. In the upper classes an almost totally illegible style appears to be cultivated with a pertinac-

ity worthy of a better cause; and in one sense these unreadable emanations may be taken as complimentary, since they assume an abnormal development in the power of deciphering unknown hieroglyphics in the readers of them. Undoubtedly, the question is a serious one, deeply interesting, and not less important. Such a deplorably low standard in the upper educated classes would naturally augur ill for the middle classes. Strange to say, however, it is here that the element of good writing is not, to speak reservedly, most conspicuous by its absence. Whilst a very large majority write, or rather scribble, execrably (and some few hopelessly), there is a residue that may be classed amongst good writers. Finally, through the length and breadth of the *masses*, 'handwriting' almost loses its identity, merging into non-existence with hundreds of thousands. Is there not a remedy? There certainly must be a reason that will account for the universally prevalent caligraphic depravity.

"Instinctively one turns to the schools, and asks what sort of writers are manufactured there to be sent out into public life every year? Can the youths who enter our universities and offices direct from school boast of their style of writing? Are they rapid, expert, or legible writers? Quite the reverse. Were it permissible in this paper, we might expatiate very fully on the history of the inquiry that has, it is believed, settled the matter once and forever. Suffice it to say that an inquiry has been instituted, experiments and observations have been made, with a view to discover the cause of the evil, and we rejoice to know that the investigation has been eminently successful.

"It is rather remarkable that the origin of the agitation and undertaking was not caligraphic or educational, but purely and simply hygienic. So far as the bad writing was concerned, people contented themselves with grumbling, and it would have ended there, but for the alarming spread of spinal curvature and short sight amongst children. Specialists were appointed to investigate, and a host of medical men in Austria, Germany, and England have devoted themselves to the study of this question. With an ardor and perseverance worthy of all praise, they examined, observed, and experimented, their experiments extending, in some cases, over thousands of children, and occupying the greater portion of their time for months, or even years. More than once the investigators

were on the wrong scent—their object being, of course, to find out the cause of the evil that confronted them—as, for example, when they accused the teachers, and laid the whole blame upon bad teaching; or when they attributed the ailments to bad light, bad desks and seats, or to bad position of the copy book.

"Undeterred, the inquiry went on, and at last it was narrowed down to the writing itself, which now received the closest attention of the experts. Experiments on a larger scale were arranged for and completed in some of the public schools, and, almost simultaneously, identical results were arrived at in different centers. It was found that the *slope* of the writing demanded the twist or contortion of the body, which twist or contortion was the sole cause of scoliosis on the one hand, and the primary cause of myopia on the other.

"It may be remarked, however, that, twenty years previously, Dr. Fahrner, of Zürich, wrote: 'We let our children grow crooked, in order that their handwriting may be nicely sloped'; but his words fell on deaf or incredulous ears. But what a contrast presents itself on the continent, and in many circles at home at the present time. The cry on all sides, ever getting louder, is, 'Death to the slope!' thus reversing the practice of the preceding two centuries, which has been 'Slope to the death!' The appeal of Dr. Sommer, of Brunswick, 'Oh, when shall we at last be free from this unhappy gift of the Middle Ages?' can now be definitely answered.

"Slanting writing, then, is doomed, since it is proved to be both injurious to the body and inimical to a high standard of excellence. The writing of the present day is sloping as a rule, and as a rule it is equally bad. We shall endeavor to prove, not only that it is bad because it slopes, but that, if it is to be good, it must be vertical.

"Going back beyond the Middle Ages, we find that up to about the sixteenth century *all writing was vertical*, and certainly it was superlatively good, as anyone may satisfy himself by going to the British Museum and delving amongst the treasures of the Parchment and Manuscript Rooms. And it is as incontrovertibly a fact of history that no sooner was the sloping or Italian style introduced than the downward grade commenced. Indeed, it is obvious that Slope and Scribble are Siamese twins. So it was from the beginning—'Slope' deposed the 'Upright' and 'Scrawl' was the outcome.

The evidence of history, then, is overwhelmingly in favor of verticality.

"But writing may be viewed in several aspects—hygienic, caligraphic, economic, and educational. What have these ruling principles to say on the question of Upright *v.* Sloping? Hygiene speaks with no uncertain sound. Medical research has fully proved the following positions: (*a*) That myopia is developed almost exclusively during school life; (*b*) that scoliosis is still more emphatically developed during the same period; (*c*) that myopia and scoliosis are distinctly traceable to the bad postures assumed and taught in the writing lessons; (*d*) that these unhealthy positions are entirely due to the 'slope' or 'slant' of the writing; (*e*) that it is impossible for writers to avoid twisting the spine unless they adopt an upright style of writing; (*f*) that vertical writing neither requires nor permits any postures of a painful or injurious character; (*g*) that vertical writing is the only system consistent with all hygienic requirements and principles. (See the exhaustive works of Drs. Schubert of Nuremberg; Noble Smith, of London; Bayr, of Vienna, etc.)

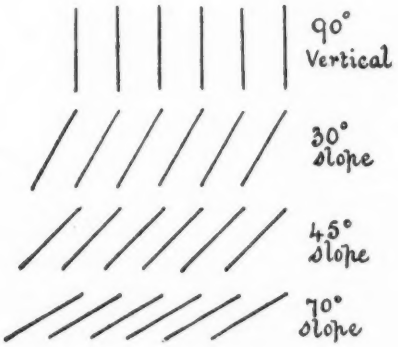
"It is then self-evident that, if vertical writing avoids all abnormal postures, it produces neither myopia nor scoliosis, and is therefore much to be preferred from the hygienic standpoint, as greatly superior to all forms of oblique penmanship.

"In dealing with caligraphic demands, it is expedient to consider, first of all, what are the essentials of a really good handwriting. These fundamental elements may be taken to be simplicity and legibility. Some would add beauty; but if the writing be composed of letters well formed, with simple outlines, short loops of uniform shape, and legible withal, it cannot fail to recommend itself as beautiful.

"Both styles of writing, the vertical and the oblique, may claim an equal share of honor on the score of simplicity, with the single exception of 'slope.' Whilst both may be equally simple in shape or outline, the former has the unique simplicity of the *one* vertical direction, whilst the other has the diversified complexity of an infinity of slopes. And it is in this manifold slope that the great—the insurmountable—obstacle of 'oblique writing' lies. A child easily, readily, and naturally, recognizes a perpendicular stroke or line, but all oblique angles present difficulties that only a trained eye can possibly appreciate and overcome. No juvenile could strike off or

maintain an angle, say of 35½ degrees, from the vertical. Upright writing is in a very great degree simpler than the sloping style can possibly be.

"Moreover, it is evidently far more legible. No one after a moment's thought can fail to realize this fact. Roman type is more easily read than italics, and the reason is not far to seek. In upright penmanship and roman type the down strokes and lines are much wider apart than in the oblique style, and it is a law of optics that, the closer objects are to each other, the less easily distinguishable they are. A simple geometrical experiment will convince the most skeptical (if skepticism be at all possible) on this point—such as the diagram now produced.



"The reader will observe that these right lines are all drawn from equi-distant apices, and that as they slope so they approach each other, the degree of distinctness diminishing with every degree of slope from the vertical. Argument is superfluous in presence of the illustration. Vertical writing unquestionably possesses the maximum of legibility. Economically, it will be seen that vertical writing has an advantage over all systems of oblique penmanship in every respect, viz., as to time, space, labour, and expense.

"Experiments conducted by teachers simultaneously on the Continent and in Great Britain show conclusively that the vertical style can be written more quickly than the slanting. Writers who have only practised the system of upright penmanship for a few months have invariably exhibited their

superiority as quick penmen in contests conducted by their teachers—Herr Bayr, Professor Scharff, and many German and Austrian teachers having supplied evidence and information on this point. It is impossible to give the philosophical and scientific reasons for this greater speed in the vertical. They are fully set forth in works on the subject.

"The economy in space is even more defined and pronounced. A reference to specimens of the two styles will determine the question at once. Finally, how many thousands of sloping writers resort instinctively to the vertical when wishing to compress their work into little room.

"The labour or energy economized by the use of vertical writing forms one of its principal features and recommendations. It will hardly be credited that not more than two-thirds of the work is required for upright penmanship, but experiment and experience invariably demonstrate the accuracy of this statement. A material saving of expense is the inevitable consequence. Less time, less space, less labour, and less material naturally mean less expenditure.

"Finally, we contemplate the educational merits of the two styles, and ask which system is the easier to learn, to teach, to write, and the more conducive to discipline. In all these respects, experience abundantly shows the vast superiority of vertical writing. As in the hygienic department medical men are the recognized competent judges, so in the educational section teachers—and teachers only who have fairly tested both systems—must constitute our Court of Appeal. Again, we can merely tabulate the conclusions that have in every case been arrived at. Test experiments on an extensive scale, and uniform experience, show that (*a*) vertical writing can be acquired in much less time than is needed in the sloping system (from one-half to two-thirds is the general estimate); (*b*) vertical writing is taught with about half the trouble and supervision requisite in oblique writing; (*c*) from the shorter lines and natural postures, upright penmanship is far easier to write; and (*d*) vertical writing is more conducive to good order, since the position of the scholar in that style renders talking more difficult and the detection of it by the teacher more easy. Summing up the arguments, they appear to be absolutely irresistible and unanswerable as against sloping writing, which is responsible for so much bad caligraphy, and, what is indefinitely worse, bad health. The suggestion of a

representative congress of teachers to seriously consider the question might here be thrown out, as such a reproach against the profession is calculated to cause mischief if not rebutted or removed. With all confidence and some knowledge of the matter, we can say that the charge against the teachers is *not* altogether groundless. If experiments similar to those carried on for some two years past in Germany and Austria, particularly in Vienna, were promoted, say by the School Board for London or by a mixed committee of medical and educational specialists, some definite practical issue would be arrived at that would establish the principle irrevocably one way or the other, and leave no room for further uncertainty or possible controversy.

"Even without this authoritative dictum, the vertical system—which has been actively promulgated for six or seven years in Great Britain—has made most remarkable progress, and is rapidly and successfully superseding the oblique style of handwriting in schools, offices, State departments, and amongst the people generally. If, as its promoters state, upright penmanship secures to us good writing and good health (neither of which, according to evidence given and two centuries' experience, is possible with sloping writing) at a less expenditure of energy, surely the sooner such a system becomes universally adopted by our people as the national style of handwriting, the better it will be for all concerned, both in the present and future generations.

"It may be expedient, in closing this brief article—an article that hardly touches the fringe of the discussion—to make a passing reference to some of the objections which from time to time have been raised by the advocates of sloping writing. Nevertheless, it must be borne in mind that the whole of these objections emanate from those who have never tested the system of upright penmanship, and who are consequently entirely unacquainted, practically, with its merits or demerits. What value, if any, attaches to such criticism, every intelligent reader must determine for himself. The first impression one receives on reviewing these objections is, that they are very few and very frivolous—insignificant alike in quantity and quality. Necessarily so. Objector *Number One*, as he turns the writing up and down, twisting his head first on this side and then on that, exclaims, with oracular emphasis, 'I don't like it! No! I really don't like it!' and the fate of a system is

thus irrevocably fixed. Argue with that man? With that woman? Vain attempt. Vertical writing is rotten, vicious, worthless, *because* the critic doesn't like it. A variation on this is the familiar reply, 'It doesn't look nice!' and these two expressions constitute the most frequent of the objections to this natural style of caligraphy. Appearances are no true test of a system, but, even when were they admitted as factors in an opinion, such items would be as salient in the hands of vertical writers against sloping or oblique penmanship. The delusion that the upright style is slower than the slanting, has been already dealt with in the paragraph on economy, but a great number of people still labour under the misapprehension. Then again, and lastly, we are told that this '*Vertical writing will make too great a change.*' Our belief is that too great a change from the bad writing of to-day cannot well be accomplished. Indeed, the greater the change the better.

"These trivialities comprise all we have encountered from the most vehement of oblique writers during a vigorous six or seven years' propagandism in the United Kingdom, and of late even these objections have waxed feebler and fainter, until they are all but inaudible. Once our teachers of all grades are thoroughly aroused to a sense of the importance of the issues at stake, there can be little doubt that upright penmanship will carry the day."

X

REVIEWS

Die Arbeitskurve einer Schulstunde.—Von Dr. LEO BURGERSTEIN. Hamburg u. Leipzig, 1891, pp. 40.

The Growth of Memory in School Children.—By Thaddeus L. Bolton, A. B., *American Journal of Psychology*, vol. iv, No. 3., pp. 19, with three charts.

These statistical investigations of the nature of mental processes in school children, and of the influences affecting them, are important as indicating the great possibilities of experimental inquiry in these directions, the necessity of substituting patiently won facts for theory and supposition, and the essentially close and vital relation between the teacher's task and the psychologist's teachings.

Dr. Burgerstein studies the mental fatigue of school children in the course of an hour's work in addition and multiplication. The tasks he sets the children are to alternately add two numbers of 20 digits each and multiply such a 20-place number by 2, 3, 4, 5, or 6. Twenty such calculations are printed on one sheet, and the children are allowed just ten minutes to work at each sheet; four such tests or sheets, I, II, III, and IV, were given, with five minutes rest in between. One hundred and sixty-two children in all took part in the test, 35 of a class the average age of which was 11 years, 33 of a class aged 11 years 10 months, 44 of a class aged 12 years 2 months, and 50 of a class aged 13 years 1 month. The total number of digits appearing in the total results is 135,637—70,787 in additions, and 64,850 in multiplications. In all there were 4.8 per cent. of errors and 2.0 per cent. of corrections; in additions 3.2 per cent. of errors and 1.6 per cent. corrections; in multiplications, 6.6 per cent. errors and 2.3 per cent. corrections. By comparing the amount of work and the proportion of error in the four successive periods of work (I, II, III, and IV), we are enabled to discover the period at which a decline in capacity takes place. That such a falling off does ensue within the hour is abundantly evident, and Dr. Burgerstein has presented it in many patiently elaborated tables. While twenty-one of the 162 children made no error at all in the first task, only seven

made none in the second, six in the third, and four in the fourth; those who fell a victim only to the snares of addition were 60 in the test I, and 38, 33, 28, in II, III, and IV; while multiplication failed to overcome 34 in test I, 19 in II, 11 in III, and 11 in IV.

It appears that while the amount of work done increases as the tasks proceed, the quality of the work degenerates. Test II shows 14.8 per cent. more work than test I; III, 25.3 per cent. more than I; and IV, 39.5 per cent. more than I. But II has 51.5 per cent. more errors and 58.2 per cent. more corrections than I; III has 136.3 per cent. more errors and 162.8 per cent. more corrections; and IV, 177.3 per cent. more errors and 194.0 per cent. more corrections. By observing that the *increase* of the number of digits in the results is 4210 of II above I, 2966 of III above II, and 4007 of IV above III, and also that the increase of errors is 441 from I to II, 719 from II to III, and 349 from III to IV, and of corrections 207, 166, and 225—it is clearly shown that the mental capacity decidedly falls off at the end of the second period of ten minutes. The increase of work (and of corrections) from II to III is least, and the increase of error greatest. Or again, there is 3.010 per cent. of error in period I, 3.978 per cent. in II, 5.673 in III, and 5.982 in IV; the most marked difference appearing between II and III. The same is also true of each class separately; and is likewise true of a very large number of the individual pupils. It is also to be observed that, after this decline of power sets in, the children get their second breath, and do comparatively little worse in the fourth than in the third period. This is Dr. Burgerstein's main result: he also presents an analysis of the nature of the errors committed; and an almost too full and involved discussion of the statistical treatment of his results. The lesson to be drawn from these conclusions is that for children of this age a more frequent change of occupation, and more frequent recreation is necessary than is afforded by periods of 50 or 55 minutes for each study. The conclusion is of course to be modified by the nature of the occupation. The result is certainly valuable, but its application must be made with caution and judgment.

Mr. Bolton's tests, conducted by Dr. Franz Boas in the schools of Worcester, Mass., were addressed to the ear rather than to the eye. A series of 5, 6, 7, and 8 place numbers

were read to the children in a regular, monotonous tone, at the rate of about five in two seconds. After each number was read the children, at a given signal, wrote down the numbers as they remembered them. A number was considered correct only when it has the right digit in the right place. The number of such sense-impressions that can be accurately reproduced after a single hearing is called the "memory-span," and this in the present tests is about *six*, for children from nine to fourteen years of age. Several classes were tested, and by comparing the rise in correctness of reproduction with advance in class and in age, it is concluded that "the memory-span increases with age rather than with the growth of intelligence. Experience in this matter is a better school than books." The query is close at hand whether this test would at all correspond with the proficiency of the pupils in their school work; and Mr. Bolton's answer is that while high standing is more often than not accompanied by a large memory-span, the relation between them is far from universal or necessary. It is also true that the girls excel the boys in this memory test.

Mr. Bolton finds that the capacity to remember dictated numbers rises as the tests proceed, thus indicating the effects of practice; and there is evidence, too, of some amount of unconscious memory from one day to the next. A comparison of the tests made in the morning and in the afternoon fails to reveal any effects of fatigue, from which it is concluded that the day's work is not excessive. It must be remembered, however, that the test is one of brief concentrated attention rather than of a prolonged memory-task. Regarding the nature of the errors, they appear to be very largely inversions of order (53 per cent.), certain natural or artificial associations often determining the nature of the inversion; next, substitutions of another number for the true one (31 per cent); and under- and over-estimations of the number of digits (15 per cent.). A very interesting point relates to the most probable position of the error; and the result is that the *first* and *last* numbers, and then those nearest these places, are best remembered. We have thus corroborated the rhetorical principle that the emphatic words of a sentence are the first and last. In addition to the points here noticed, Mr. Bolton presents an able discussion of the method of computing the data and arranging the tests.

These conclusions are in no sense final, and are manifestly limited in scope; but they are certainly valuable so far as they go, and their suggestive value and incentive to set others to work, it is hoped, will lend them additional interest.

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Handbook of Psychology; Feeling and Will. By JAMES MARK BALDWIN, M. A., Ph. D., Professor in the University of Toronto. New York: Henry Holt & Co., 1892, pp. xi, 394.

One naturally compares this volume from the pen of Professor Baldwin with the new work by Professor James, which everyone interested in psychology has been reading. In clearness and force of style, in avoidance of unnecessary technicality in language, the advantage lies with James. Not that the latter is always clear,—it would be difficult to find a more unsatisfactory bit of writing than his chapter on conception, for example,—but ordinarily he is straightforward and unmistakable, and will be read by most thoughtful persons with a pleasure arising partly from the brilliant and entertaining style in which his thought is expressed. Professor Baldwin, on the contrary, uses throughout the language of the schools, and his book is not easy reading. He abounds in such sentences as the following: "Ethical judgment is, therefore, the belief form of the ethical ideal as far as its elements are conceived"—a sentence which could only strike dismay to the heart of the student using this volume as a text-book. This defect in diction is a serious defect in what is otherwise a thoughtful and learned work, and will, in my opinion, detract from its influence.

In systematic arrangement the advantage is clearly with Professor Baldwin. The apparently accidental arrangement of chapters in James's book he has declared in his briefer works to be of *malice prepense*. In that case one can only regret that it seemed good to him to arrange things as he has. Professor Baldwin, on the other hand, is thoroughly systematic, and the student will find this of no small assistance in gaining a clear conception of the outlines of the subject discussed by the author. Again, Professor James, although an advocate of the study of psychology as a natural science, has filled his book from beginning to end with metaphysics. His chapter on sensation, to give one out of many possible examples, is

not a psychological discussion of sensation at all. It is a philosophical polemic. Baldwin distinguishes carefully between what is psychological and what is not, and tries, at least, to keep metaphysics proper out of his chapters. How far it is possible to separate the two fields is a matter of dispute, but it is not difficult to distinguish books largely metaphysical from books chiefly psychological, and psychologists of the present day are generally of the opinion that some division of labor is a desideratum.

Professor Baldwin's account of the feelings would be clearer if he held fast to the distinction between the broader and the narrower sense of the word "feeling," and made unmistakable in what sense the word is used in each case. Feeling is defined (p. 85) as "the simple awareness of the unreflective consciousness." Sensations of all kinds, whether special or organic, are brought (p. 86) under the common name, feeling. When, however, it is asked what is the common mark that brings all these mental elements under the one name, Professor Baldwin answers that it is the element of pleasure and pain attached to them (p. 86). Now, if by feeling we mean pleasure and pain, and not, properly speaking, the psychical states they accompany, we use the word in a sense quite distinct from the broader one also justified by common usage, which applies the word feeling to any dim and indefinite state of consciousness. In this latter sense of the word we may feel that an argument is right when we do not distinctly perceive the validity of the steps by which it arrives at its conclusion. In the former we *feel* pleasure in thus feeling the argument to be right. Now, Professor Baldwin does not keep consistently to either sense of the word, as might be illustrated by quotations from pp. 135, 251, 149, 155, 169, etc. If the reality-feeling be a distinct element of consciousness, given with each experience of a real object, it must be present in the mind of the child from the first experience of such an object, and must not attach to mere images. If, on the other hand, it be merely a name for the perhaps indefinite recognition of the relation of the experience in question to other experiences, the word feeling is used in the broader sense and these difficulties are avoided. In the latter case, however, idealistic philosophy cannot with even apparent plausibility be called a "revolt from the sensational coefficient" (p. 169), as the primary criterion of external

reality given by Professor Baldwin is identical with that given by Berkeley in the early part of the last century, and is one more in harmony with Berkeley's notion of what constitutes reality in ideas than with that of Professor Baldwin. It will readily be seen that the psychological discussion of feeling has no little significance for epistemology.

Professor Baldwin's discussion of volition is more clear and satisfying than his chapters on feeling. His way of stating the elements present in volition, and his treatment of the problem of the freedom of the will, are admirable, and must interest both those who agree with him and those who dissent. He agrees with James in granting consciousness a causative efficacy. He repudiates indeterminism and external determinism, accepting the view that volition is the expression or realization of the man, and thus in a sense determined, but determined from within.

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The Principles of Agriculture for Common Schools.—By I. O. WINSLOW, A. M. New York: American Book Company, 1891, pp. iv, 152.

This little book has been prepared to meet a demand frequently expressed in newspapers, and occasionally felt by earnest seekers after knowledge of farming. It probably answers its purpose as well as such an epitome of general principles can, and is marred by as few inaccuracies of statement as any similar book. That it will serve its purpose of instruction in the common schools may, however, be doubted. It is a collection of general statements from standard authorities in chemistry, botany, geology, physiology, physics, and meteorology, with a very few practical applications of such principles. In general these statements must be taken without illustration or proof, and in many instances without means of understanding what they teach. Naturally, the effort to condense such a mass of information into a few pages makes the statements peculiarly bald and uninviting. To an average youth of fifteen, without previous knowledge of the sciences borrowed from, these bald statements have almost no meaning, and the effort to learn and recite them is a mere exercise of memory. To farmers of experience, the book will be of little help, except in furnishing a very few tables of

relative values of feeds, and a few suggestions as to tillage. I cannot see any probability that it will meet the want of a text-book for the common schools.

The fact is that any teaching of agriculture in the common schools should proceed from tl ngs and rules already familiar, and principles already established, and should lead pupils, even at an early age, to look at the things they handle every day, with some idea of finding out how nature acts. The general principles can then be given as a summary of experience. The general statement as to vegetable growth, for instance, is worth something to one who has seen it illustrated by actual examples of growing plants. The whys and wherefores of ordinary practice in farming may be understood only after a considerable aquaintance with effects of the practice. General directions founded upon principles may be multiplied to advantage if they are clearly expressed and illustrated by the simplest of examples. I believe problems in agriculture might be proposed to the advantage of students, the rules and data for solution being given as in other sciences. Of course, any book for developing agricultural knowledge among common school pupils should have, first and foremost, the idea of interesting them, and should teach observation in the clearest possible manner. An effort to teach agriculture by simple condensation of knowledge into a few pages, is likely to be as successful as would be the teaching of medicine in a similar volume.

The chief obstacle to teaching agriculture in common schools is the want of teachers themselves interested in the subject. The admirable young men and young women who manage the country schools cannot be prepared for such teaching without a longer course of study than many of them receive. Of those who do receive such training, few have the tact to use well the everyday materials for illustration and observation. The same difficulty appears in the teaching of most of the arts of life. Any successful teaching in this line is truly elementary in subject-matter and method. Elementary practice is the foundation of all accurate knowledge in arts of every kind. Agriculture can be no exception this rule.

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A First Book of Electricity and Magnetism, for the use of Elementary Science and Art, and Engineering students, and general readers.—By W. PERREN MAYCOCK, M. I. E. E. London: Whittaker & Co., 1891, pp. 133.

This little book is intended, as the author states in his preface, to be an easy introduction to the ordinary elementary text-books on electricity and magnetism, such as that of S. P. Thompson. At the present time, when electrical appliances are so familiar in everyday affairs, it is almost a necessity for everyone to understand the fundamental laws that underlie the applications. To those beginning this study, it is especially important that their first conceptions be accurate; and to that end it is advantageous that their text-book be free from loose statements, and yet express the fundamental facts in simple, concise, and accurate language. This Mr. Maycock has done in the volume before me, and it should commend itself to teachers in high schools and preparatory institutions. The book is primarily intended to cover the syllabus of the elementary stage in the government department of science and art in London.

The subject-matter is taken up in order under the following headings: magnetism, electro-kinetics, electro-statics. Simple experiments which every student should perform are suggested and described; and at the end is given a list of the necessary apparatus, which may be had for a very small sum. All explanations are based on the latest ideas; the conception of lines of force is early introduced, and its importance emphasized.

The cuts throughout the book, if not æsthetic, have the merit of clearness and simplicity. At the end of each division are questions, to which the student should be made to write out answers, in his own language as far as possible, with a view to correct expression. Ruled paper for notes is bound with the book at the end, which some may think advantageous. The author promises a second book of electricity and magnetism, which shall be more advanced, and in which he will enter into the consideration of the construction of apparatus.

A. S. MACKENZIE

BRYN MAWR COLLEGE

XI

EDITORIAL

The world of letters and of politics has paid its tribute to George William Curtis. His services to higher education were less conspicuous than those to literature and public life, but hardly less important; for the influence of his lofty ideals, fine enthusiasm, and graceful literary art was often felt in academy, college, and university. As Chancellor of the University of the State of New York, Mr. Curtis occupied an educational position of great honor and dignity. His interest in the expanding work of that remarkable institution was very great, and his aid and counsel will be sorely missed. The place of Chancellor Curtis must be occupied, but can hardly be filled.

It is interesting to learn what a large proportion of the new British House of Commons are highly educated men. Of the 670 members, 245 have been to either Oxford or Cambridge; 144 were at the former, and 101 at the latter university. Of the great Public Schools, Eton is represented by 107, and Harrow by 55. London University has 13 graduates on the list; Trinity College, Dublin, has 17; Edinburgh, 16; Glasgow, 8; St. Andrews and Aberdeen, 5 each. The new ministry contains an unusual number of men who have won academic or literary distinction before taking up politics.

England has as yet no distinctive minister of education, but in many respects the Vice President of the Committee of the Council on Education serves in that capacity. No little interest was manifested in Mr. Gladstone's selection for this office; as the successor to Sir William Hart-Dyke—who, though a Tory, has associated his name with free elementary education and the extension of technical instruction—will have an opportunity to accomplish many important reforms. When the new appointments were made public, it was found that this post fell to Mr. Arthur H. D. Acland, one of the

best fitted men in all England to occupy it. For some years Mr. Acland has been dubbed in Parliament "the member for education," because of his great interest in educational topics and great familiarity with them. Mr. Acland is a leader of the younger Oxford liberals, and has been prominently identified both with university extension and the technical education movement. He first proposed turning over the extra duty on spirits to the county councils for educational purposes, and is the introducer of the bill for the registration of teachers—the passage of which will make teaching in England a profession in fact as well as in name. It is noteworthy that Mr. Acland is also to have a seat in the Cabinet. This is an honor enjoyed by none of his predecessors save Mr. W. E. Forster, and marks Mr. Gladstone's high appreciation of the importance of state action in education.

One of the very best educational journals published in the English language—*The Academy*, edited by Mr. George A. Bacon of Boston—has suspended publication. The secondary schools, to whose interests it was chiefly devoted, and of which it was the acknowledged organ, will deeply regret the necessity of this step. High-class educational magazines and papers are lamentably few, and no one of them can well be spared. Several score of the wretched periodicals that bind teachers down to personal gossip, wishy-washy "pedagogy," and more or less dubious "methods of teaching," could profitably be exchanged for one *Academy*. It was conducted upon a high plane, with intelligence and courtesy, and its editor has won for it and for himself the esteem of all who gave it their support.

A translation of Lange's *Ueber Apperzeption* is one of the results of the Round Table meetings at Saratoga. One of those bodies formed itself into a Herbart Club, and the members have nearly ready for publication their translation of Lange's important work. Some eight or ten persons are co-operating in the work, which will be edited by President Charles De Garmo of Swarthmore College. It is hardly necessary to point out the value of this translation. Teachers who do not read German can, by its help, come to understand some of the real principles of the newer education. The Her-

bart Club should not stop here. Surely English translations of some of Rein's writings and of Ufer's' *Vorschule der Pädagogik Herbart's*, and other similar works, would find many readers.

The EDUCATIONAL REVIEW cheerfully complies with a request to assist a member of the department of the history and art of teaching of Harvard University in obtaining information concerning normal instruction for teachers given in connection with secondary schools. Principals of secondary schools that offer any normal instruction are invited to correspond with Mr. H. Gordon Johnson, 48 Concord Avenue, Cambridge, Mass., who is carrying on an investigation concerning this subject.

The movement in the grammar schools goes rapidly on. The time for prolonged discussions and half-way measures is past; the *laudator temporis acti* has been swept off his feet. Even his abuse of the "innovators" can hardly be heard. Professor Hart, in a paper published in this issue, which every school superintendent and principal may well study carefully, tells by what processes of reasoning, and by what adjustments of means to ends, a very elaborate series of reforms has been devised, and put into effect in the grammar schools of Cambridge. Nothing has been done there which any well-equipped city school system cannot, and should not, imitate. At the same time it is announced that in Paterson, N. J., an even larger city than Cambridge, the elementary school course is being reorganized on the new lines. The course of study is framed for eight years instead of nine, kindergartens are introduced in every school, science is to be taught in the lower grades, the readers taken away and the reading of literature substituted, the great surplusage of arithmetic cut out, the departmental system of teaching introduced into the upper grades, and so on. The story is becoming familiar. One city after another is falling into line so rapidly that those who have proposed and advocated these sweeping reforms may well congratulate themselves on the unexpectedly rapid success of their efforts.

Superintendent Aaron Gove of Denver has the exceedingly rare merit among school superintendents of being able to

write in very small compass an annual report on the progress of the schools under his direction, and at the same time to say all that ought to be said. In his last report the showing made for the Denver schools is most gratifying. The public schools of Denver have now a national reputation. Holding fast to what has been established, the school authorities have incorporated new features only when in other places they had passed beyond the range of experiment. The introduction of a new feature, when once resolved upon, however, is not made in any half-hearted or "penny-wise, pound-foolish" manner. Thus, drawing was not made part of the course of study until three years ago, but when it did come, it was placed on the same basis as all the other studies whose object is "to round out and complete the discipline of the individual, and not to give certain accomplishments, mathematical, artistic, or other." Music and physical culture have been introduced in the same way. "Music," says Mr. Gove, "is pursued as a study and not as a recreation. Classes are daily conducted by the teacher in charge of the room." For purposes of physical culture, each school building in Denver has been supplied with dumb-bells, wands, parallel bars, and a horizontal bar—an equipment for this purpose which is probably unrivaled in the public school systems of the country. The Denver schools, however, have this great advantage from climatic conditions, that nearly all the work of physical training can be done out of doors all the year round. Such being the case, it is to be regretted that the lessons in physical culture have hitherto been reserved for the pupils of the higher grades. Physical culture is as much the right of every child as is the right of being taught to read.

The most significant thing, however, in Mr. Gove's report is the announcement that steps have been taken toward the establishment of a mechanic arts or manual training high school. The magnificent high school, of which Denver is justly proud, has almost reached the limits of its capacity, and the school board, instead of establishing another literary high school, is wisely considering the propriety of founding a school whose distinctive character shall be the study of science and its applications to the mechanic arts. Should Denver, Boston, and Brooklyn, all of which have this matter

under consideration, succeed in establishing manual training schools, a great impetus will be given to the movement, and we may expect to see the technical high school take its rightful position on the same plane as the literary high school, in every large city in the country.

The manual training high school, or mechanic arts school, as Superintendent Seaver of Boston calls it, has emerged from all the discussion and agitation of the past ten years on manual training, as the one institution that is acknowledged, by all who have given it attention, to be a complete and permanent success. Efficient schemes of manual training suitable for elementary schools will doubtless be evolved in time, if, indeed, they have not been evolved already; but the manual training high school, as attested by its magnificent results in preparing its students for every department of active life, by the affection and admiration of those who have gone through its curriculum, and by the popular support it enjoys, may already be regarded as a permanent feature of the American educational system. The history of the manual training schools of Philadelphia, Baltimore, Chicago, and Toledo, is amply sufficient to demonstrate the truth of this assertion. While there are exceptional cases, where manual training, when introduced as part of a scientific course in a literary high school—a "side show," as it were—has partially succeeded, it is also true that the most conspicuous success has been attained where the work has been isolated in a building specially prepared for the purpose, and where it is conducted by specially trained teachers. Manual training will not flourish in an uncongenial atmosphere or where the instructors are not enthusiastic believers in its efficacy as an educational force. The establishment and maintenance of a manual training high school are not nearly so expensive as are the establishment and maintenance of a literary high school; but, still, a considerable amount of money must be forthcoming to support a school of, say, three hundred students. The financial authorities of cities have been slow to recognize the fact that the manual training high school is one of the great needs of our modern industrial civilization, and it now becomes the duty of superintendents, and others who are interested, to foster an enlightened public sentiment, that shall constrain

public officials to recognize and perform their duty in this matter.

Boards of education, as a rule, have been quicker to recognize their duty in this respect than have been the officials who control the public purse. In Brooklyn, for example, the board of education has, during two successive years, by decisive votes, asked the city authorities for funds to establish a manual training high school. Each time the financial authorities of the city, at whose head is the Mayor, have refused the appropriation. As the State law on the subject authorizes the introduction of manual training only after the funds have been specifically appropriated for the purpose, the financial authorities are in the position of exercising a veto power over the judgment of the board of education, twice deliberately expressed. Nothing but enlightened public opinion will remedy such a state of affairs.

During the past few years a new phase of the English University Extension movement has been developed at Oxford. Not satisfied with sending her lecturers throughout the length and breadth of England, wherever an audience could be found, Oxford now invites all who have pursued a certain number of University Extension courses to attend lectures in the university halls for two weeks in the long vacation. The success of the University Extension movement in England has been one of the marvels of modern education, but the popularity of these short summer courses is not less wonderful. From all parts of England, young men and young women, from shops, from stores, from the carpenter's bench, from the blacksmith's forge, from the schoolroom, even from the servants' hall, flock to the ancient seat of learning on the Thames to listen to the foremost professors in literature, science, and art. Thus Oxford has become one of the great summer resorts of England; not the resort, however, of wealth and fashion, but of those who, limited in means and circumscribed in action by their conditions of life, embrace this priceless opportunity of spending a few days each year in the "calm air of delightful studies." The diffusion of knowledge, the impetus to high thinking and holy living, that come from such lectures before such audiences, are simply incalculable; but the benefits are not all to the visitors. It was a

great day for Oxford when her professors and fellows and tutors emerged from their cloistered seclusion to teach among the common people; when they cast aside the airs of the pedant in order to address popular audiences; when they deserted for a time the musty atmosphere of books to breathe the fresh air of everyday life. While Oxford has become a living source of learning and refinement for the masses, the masses are gradually breaking down the time-honored conservatism and prejudice that still cling to her institutions as the ivy clings to her ancient towers.

Some of our leading American universities that are favorably situated, might do worse than take a leaf out of Oxford's book by the establishment of similar courses of summer lectures. Such courses would be entirely distinct from the summer schools that are already established in considerable numbers. They would call for the best lecturers in the colleges and universities, and should appeal directly to that vast host of young people whose vocations do not permit a holiday of over two weeks each summer.